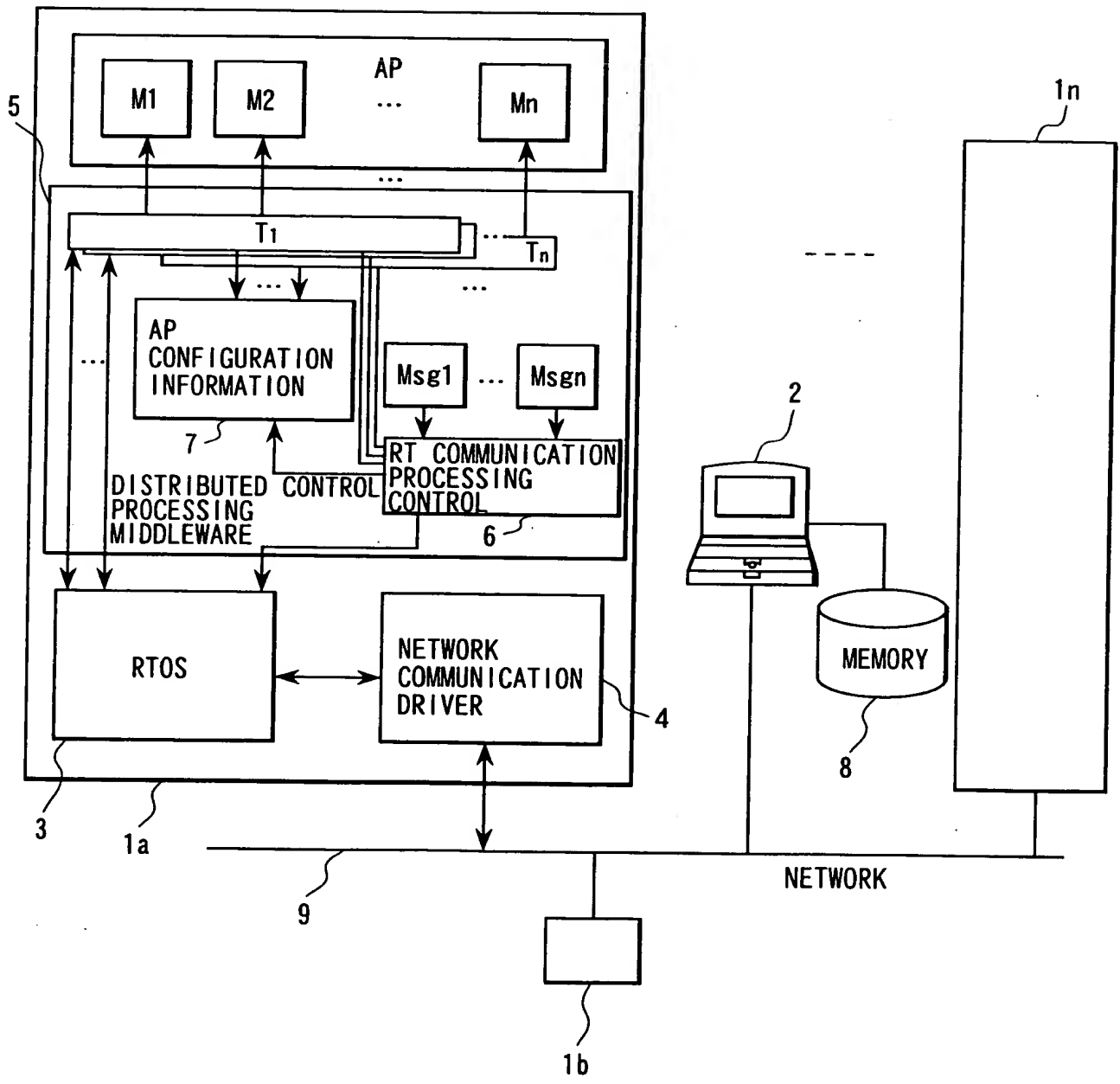


FIG.1



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.2

21a AP MODULE	21b NEXT EXECUTED MODULE	21
M1	Msg 1 SENDING	
M2	M3	
M3	NULL	
M4	Msg 3 SENDING	
M5	NULL	
⋮	⋮	
Mn	NULL	

22a MESSAGE OBJECT NAME	22b PRIORITY OF COMMUNICATION PROCESSING	22c INTERNAL/ EXTERNAL COMMUNICATION	22d KIND OF COMMUNICATION SERVICE	22e AT SENDING	22a 22 AT RECEIVING
Msg1	NULL	INTERNAL	INTERNAL	Msg1 RECEIVING	M2
Msg2	MIDDLE	EXTERNAL	EXTERNAL	NULL	M4
Msg3	LOW	EXTERNAL	EXTERNAL	M5	NULL
⋮		⋮			
Msgm	HIGH	EXTERNAL	EXTERNAL	NULL	NULL

FIG.3

FLOW CHART SHOWING OPERATION OF MODULE STARTING CONTROL TASK

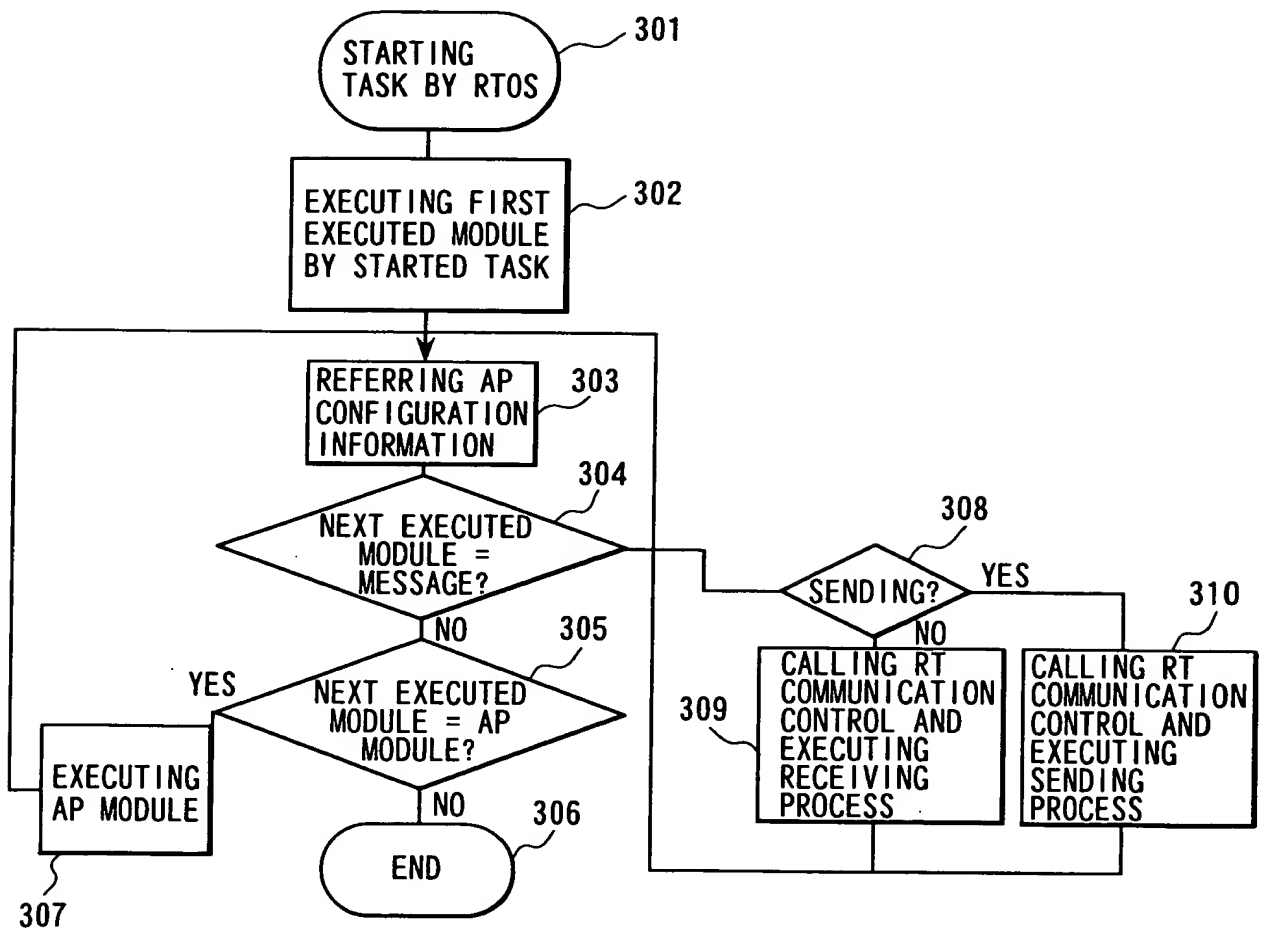


FIG.4

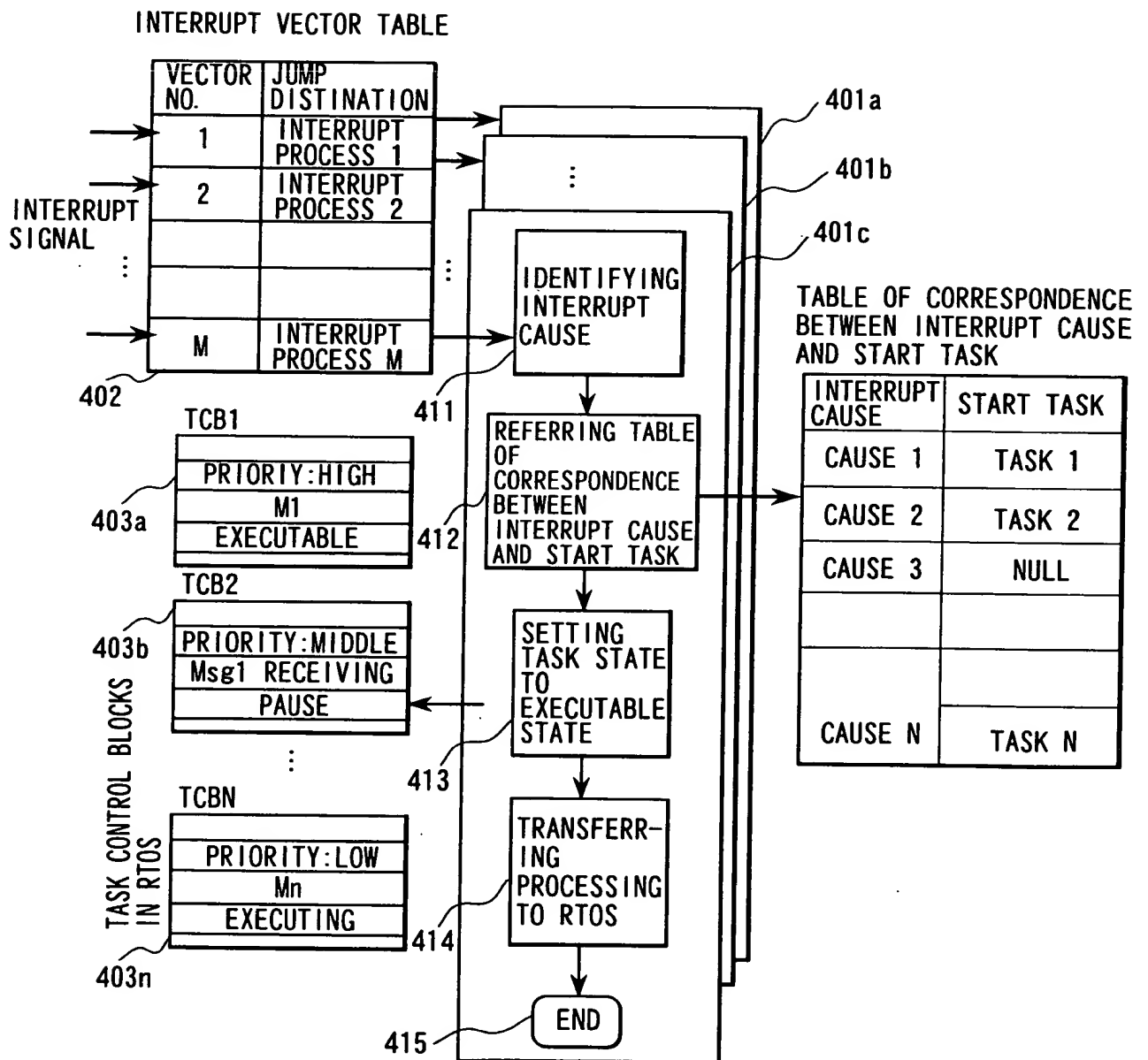


FIG.5

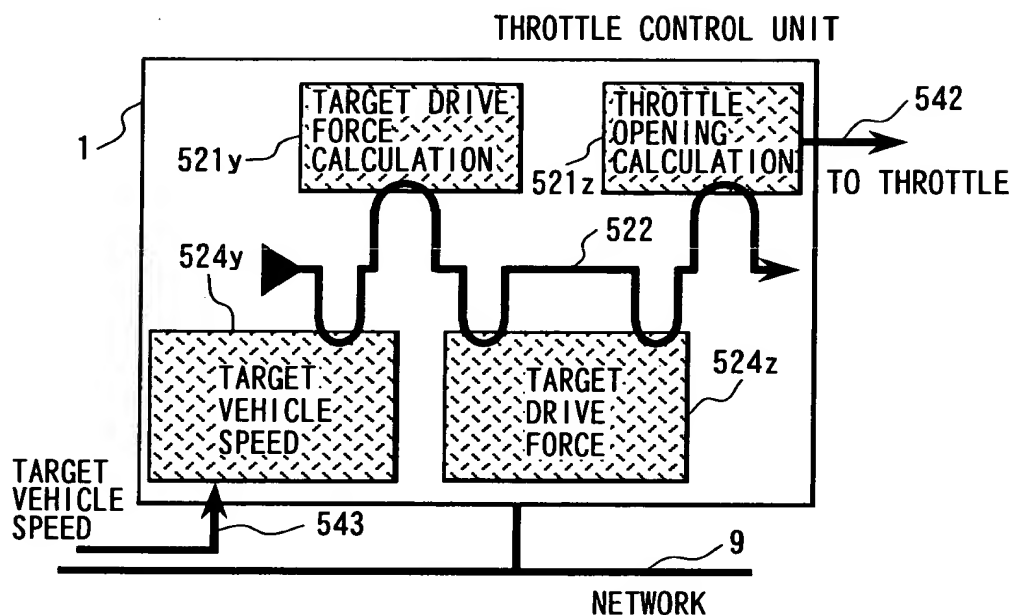
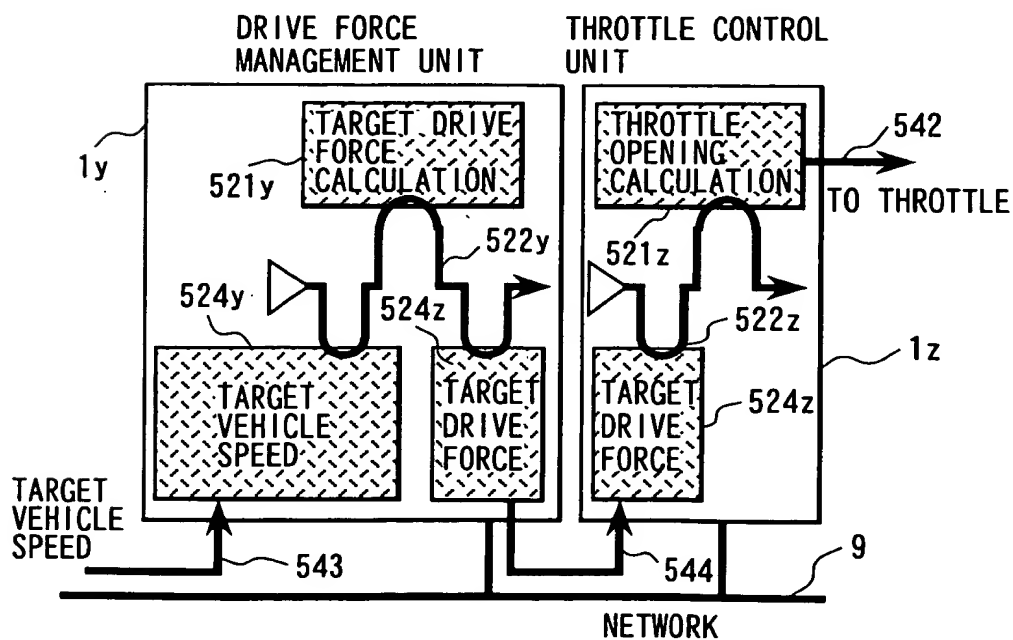


FIG.7



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.6(a)

INTERRUPT CAUSE	START TASK
30ms TIMER	MODULE START CONTROL TASK A

FIG.6(b)

PRIORITY:HIGH
RECEIVING TARGET VEHICLE SPEED

FIG.6(c)

AP MODULE	NEXT EXECUTED MODULE
TARGET DRIVE FORCE CALCULATION	TARGET DRIVE FROCE, SENDING
THROTTLE OPENING CALCULATION	NULL

FIG.6(d)

MESSAGE OBJECT NAME	PRIORITY OF COMMUNICATION PROCESSING	INTERNAL/ EXTERNAL COMMUNICATION	KIND OF COMMUNICATION SERVICE	NEXT EXECUTED MODULE	
				AT SENDING	AT RECEIVING
TARGET VEHICLE SPEED	MIDDLE	INTERNAL	ASYNCHRONOUS	NULL	TARGET DRIVE FORCE CALCULATION
TARGET DRIVE FORCE	NULL	INTERNAL	SYNCHRONOUS	TARGET DRIVE FORCE, SENDING	THROTTLE OPENING CALCULATION

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.8(a)

INTERRUPT CAUSE	START TASK
30ms TIMER	TASK A

INTERRUPT CAUSE	START TASK
TARGET DRIVE FORCE RECEIVING	TASK B

FIG.8(b)

PRIORITY:HIGH
RECEIVING TARGET VEHICLE SPEED

PRIORITY:HIGH
TARGET DRIVE FORCE RECEIVING

FIG.8(c)

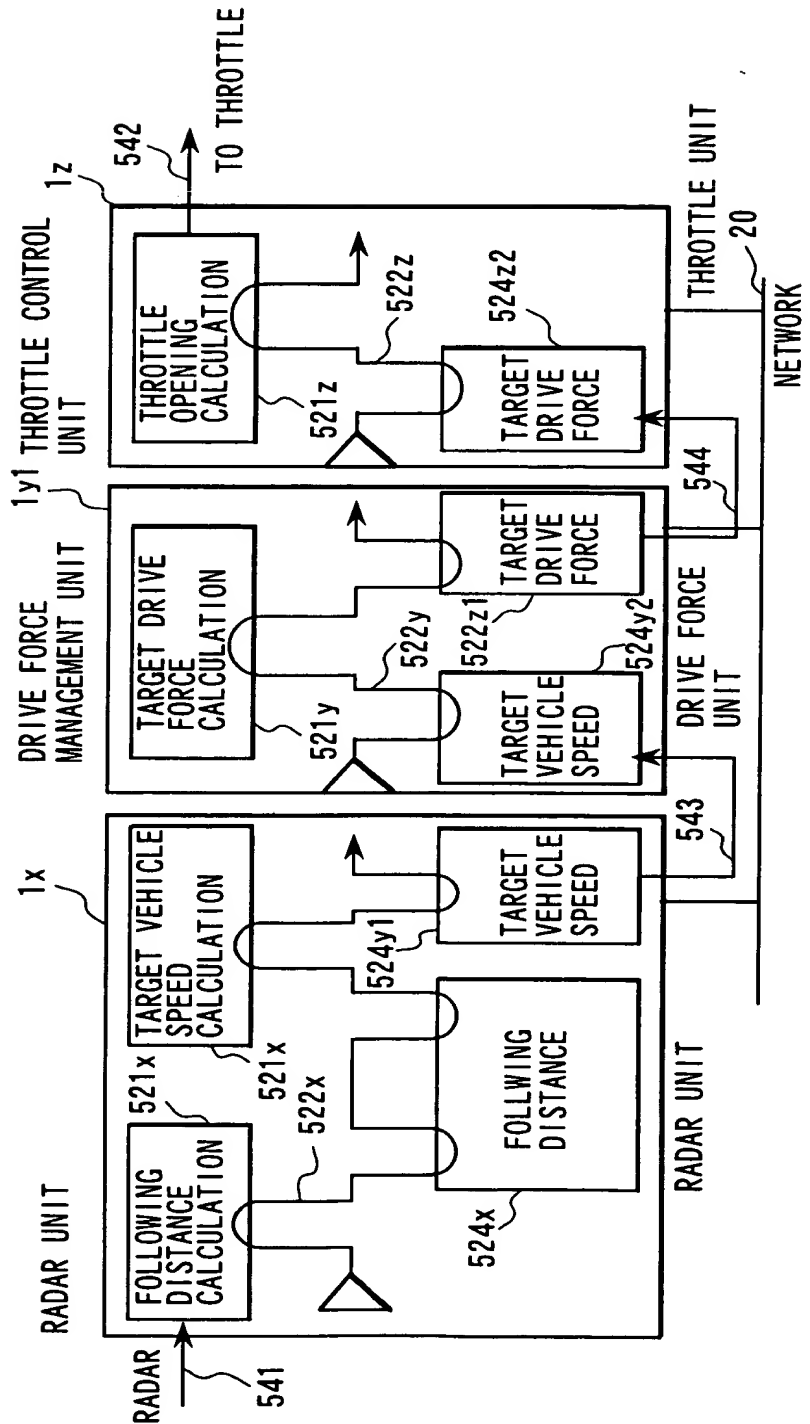
AP MODULE	NEXT EXECUTED MODULE
TARGET DRIVE FORCE CALCULATION	TARGET DRIVE FORCE, SENDING
THROTTLE OPENING CALCULATION	NULL

FIG.8(d)

MESSAGE OBJECT NAME	PRIORITY OF COMMUNICATION PROCESSING	INTERNAL/ EXTERNAL COMMUNICATION	KIND OF COMMUNICATION SERVICE	NEXT EXECUTED MODULE	
				AT SENDING	AT RECEIVING
TARGET VEHICLE SPEED	MIDDLE	INTERNAL	ASYNCHRONOUS	NULL	TARGET DRIVE FORCE CALCULATION
TARGET DRIVE FORCE	HIGH	EXTERNAL	SYNCHRONOUS	NULL	THROTTLE OPENING CALCULATION

FIG.9

PARAMETER CHANGE DUE TO ADDITION OF RADAR UNIT (FOLLOW-UP CONTROL)



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
GRANTMAN		

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FIG.10

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT CAUSE AND
START TASK IN DRIVE FORCE MANAGEMENT UNIT

INTERRUPT CAUSE	START TASK
TARGET VEHICLE SPEED RECEIVING	TASK A

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT AND START
TASK IN THROTTLE CONTROL UNIT

INTERRUPT CAUSE	START TASK
TARGET DRIVE FORCE RECEIVING	TASK B

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT CAUSE AND
START TASK IN DRIVE FORCE MANAGEMENT UNIT

INTERRUPT CAUSE	START TASK
30ms TAIMER	TASK C

FIG.11

TCB OF TASK A

PRIORITY:HIGH
RECEIVING TARGET VEHICLE SPEED

TCB OF TASK B

PRIORITY:HIGH
TARGET DRIVE FORCE RECEIVING

TCB OF TASK C

PRIORITY:HIGH
FOLLOWING DISTANCE CALCULATION

APPROVED	D.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.12

TABLE OF AP MODULE CONFIGURATION INFORMATION

AP MODULE	NEXT EXECUTED MODULE
TARGET DRIVE FORCE CALCULATION	TARGET DRIVE FORCE, SENDING
THROTTLE OPENING CALCULATION	NULL
FOLLOWING DISTANCE CALCULATION	FOLLOWING DISTANCE, SENDING
TARET VEHICLE SPEED CALCULATION	TARGET VEHICLE SPEED, SENDING

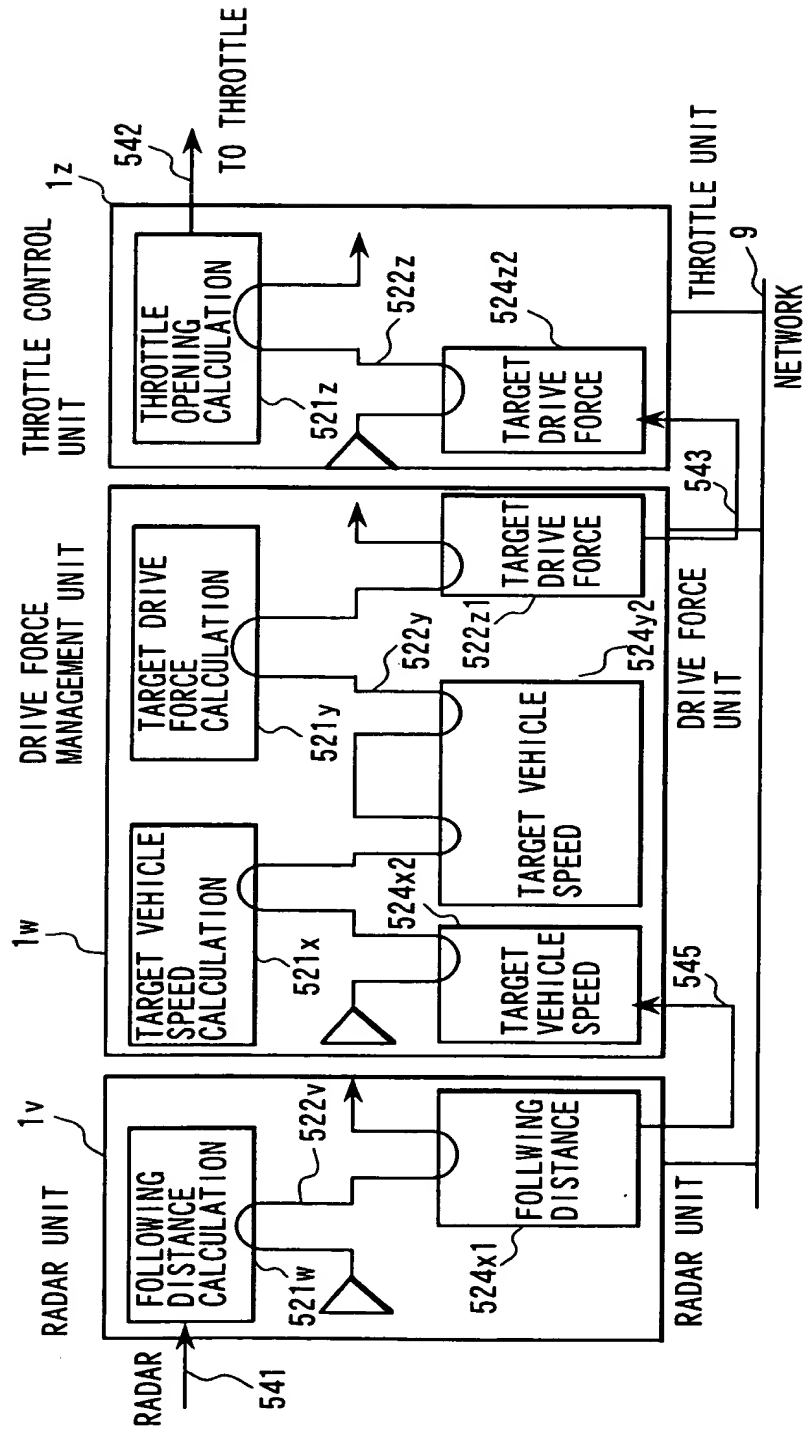
FIG.13

TABLE MESSAGE OBJECT CONFIGURATION INFORMATION

MESSAGE OBJECT NAME	PRIORITY OF COMMUNICATION PROCESSING	INTERNAL/ EXTERNAL COMMUNICATION	KIND OF COMMUNICATION SERVICE	NEXT EXECUTED MODULE	
				AT SENDING	AT RECEIVING
TARGET VEHICLE SPEED	MIDDLE	INTERNAL	SYNCHRONOUS	NULL	TARGET DRIVE FORCE CALCULATION
TARGET DRIVE FORCE	HIGH	EXTERNAL	SYNCHRONOUS	NULL	THROTTLE OPENING CALCULATION
FOLLOWING DISTANCE	NULL	INTERNAL	SYNCHRONOUS	FOLLOWING DISTANCE, RECEIVING	TARGET VEHICLE SPEED CALCULATION

FIG.14

PARAMETER CHANGE DUE TO ADDITION OF RADAR UNIT (FOLLOW-UP CONTROL)



APPROVED	O.C. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.15

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT CAUSE AND START TASK IN DRIVE FORCE MANAGEMENT UNIT

INTERRUPT CAUSE	START TASK
FOLLOWING DISTANCE CALCULATION	TASK A

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT AND START TASK IN THROTTLE CONTROL UNIT

INTERRUPT CAUSE	START TASK
TARGET DRIVE FORCE RECEIVING	TASK B

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT CAUSE AND START TASK IN DRIVE FORCE MANAGEMENT UNIT

INTERRUPT CAUSE	START TASK
30ms TAIMER	TASK C

FIG.16

TCB OF TASK A

PRIORITY:HIGH
RECEIVING TARGET VEHICLE SPEED

TCB OF TASK B

PRIORITY:HIGH
TARGET DRIVE FORCE RECEIVING

TCB OF TASK C

PRIORITY:HIGH
FOLLOWING DISTANCE CALCULATION

APPROVED	C.D. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.17

TABLE OF AP MODULE CONFIGURATION INFORMATION

AP MODULE	NEXT EXECUTED MODULE
TARGET DRIVE FORCE CALCULATION	TARGET DRIVE FORCE, SENDING
THROTTLE OPENING CALCULATION	NULL
FOLLOWING DISTANCE CALCULATION	FOLLOWING DISTANCE, SENDING
TARGET VEHICLE SPEED CALCULATION	TARGET VEHICLE SPEED, SENDING

FIG.18

TABLE OF MESSAGE OBJECT CONFIGURATION INFORMATION

MESSAGE OBJECT NAME	PRIORITY OF COMMUNICATION PROCESSING	INTERNAL/EXTERNAL COMMUNICATION	KIND OF COMMUNICATION SERVICE	AT SENDING NEXT EXECUTED MODULE	AT RECEIVING
TARGET VEHICLE SPEED	MIDDLE	INTERNAL	SYNCHRONOUS	TARGET VEHICLE SPEED, RECEIVING	TARGET DRIVE FORCE CALCULATION
TARGET DRIVE FORCE	HIGH	EXTERNAL	SYNCHRONOUS	NULL	THROTTLE OPENING CALCULATION
FOLLOWING DISTANCE	NULL	INTERNAL	SYNCHRONOUS	FOLLOWING DISTANCE, RECEIVING	TARGET VEHICLE SPEED CALCULATION

FIG.19

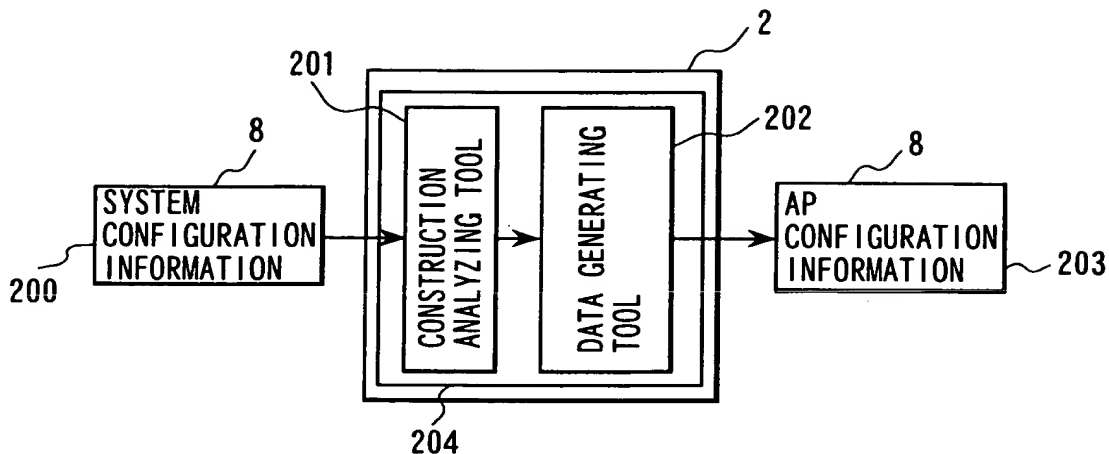


FIG.20

DISTRIBUTED CONTROL PROCESSING MIDDLEWARE CODE GENERATING TOOL

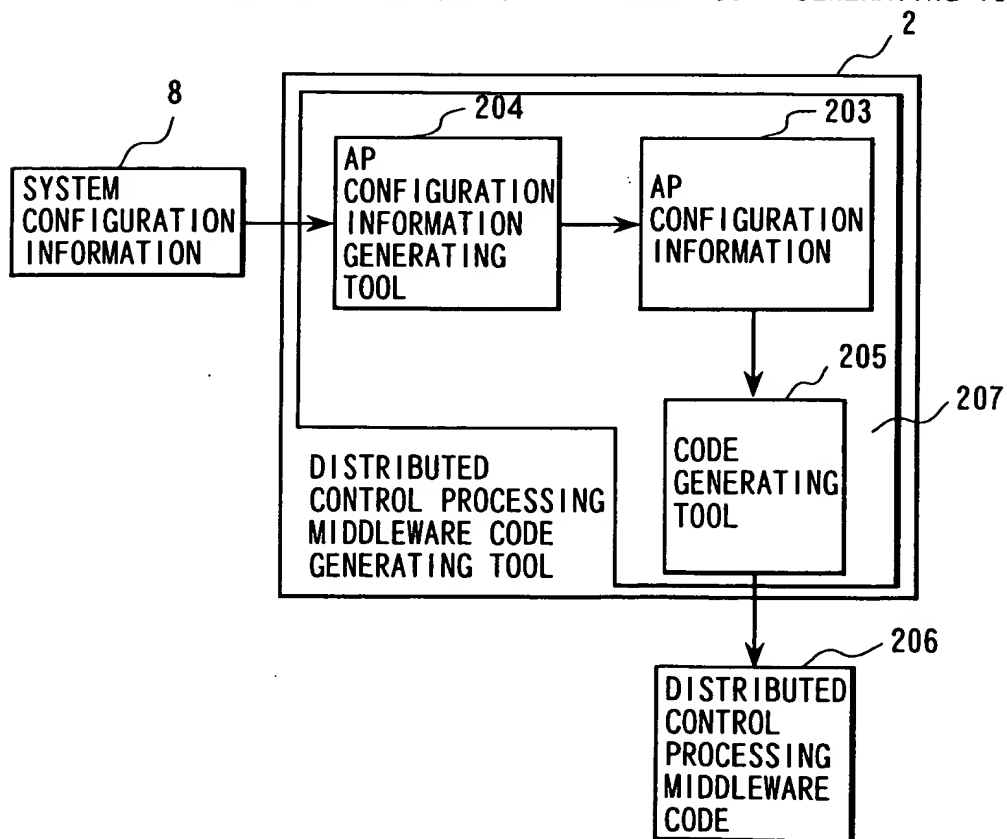


FIG.21

DISTRIBUTED CONTROL SYSTEM

USER DEFINED INFORMATION

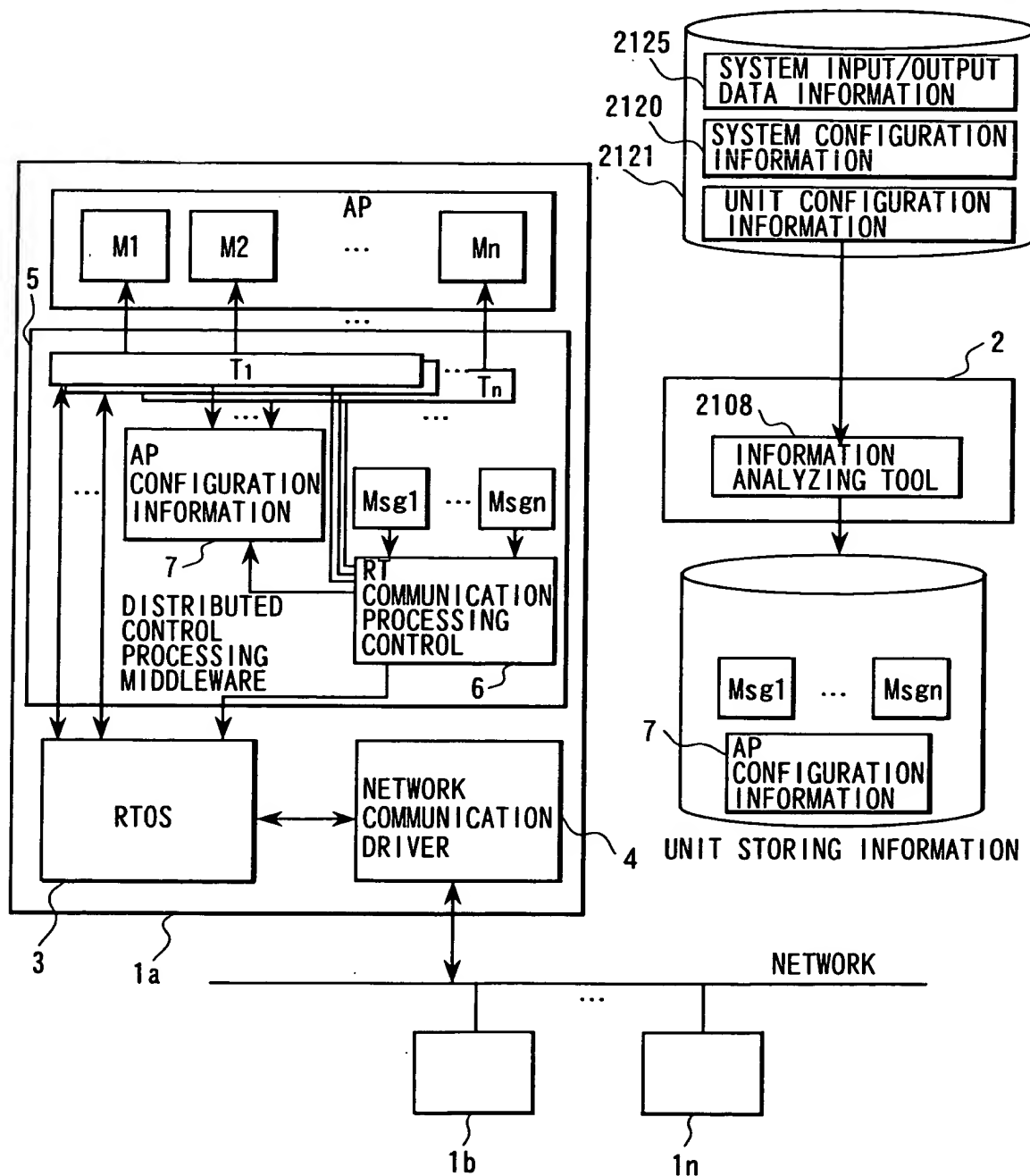


FIG.22

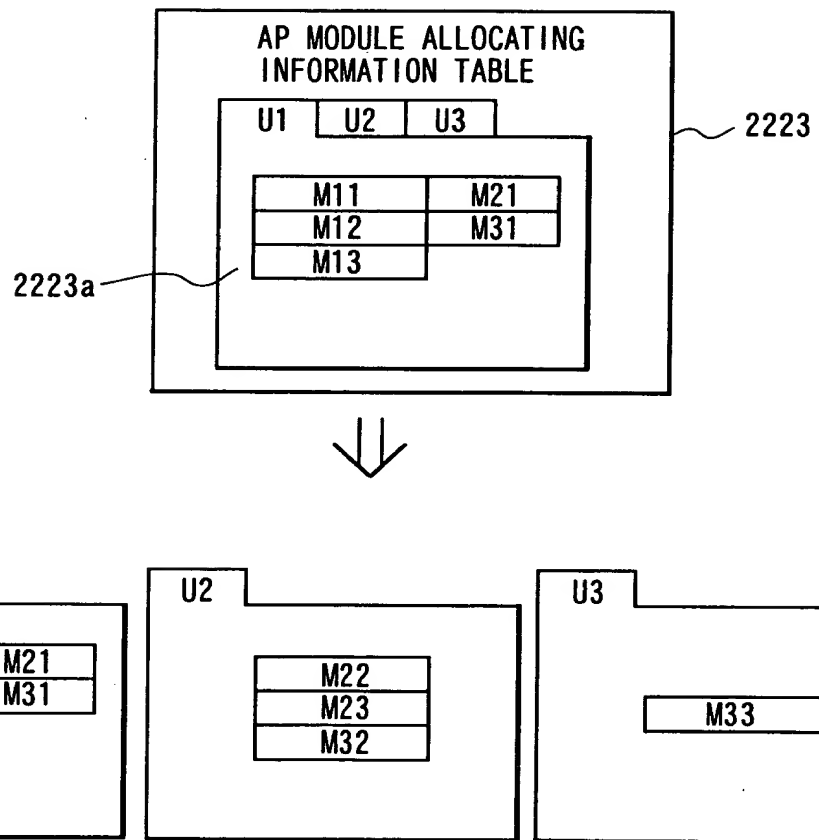


FIG.23

SYSTEM INPUT/OUTPUT INFORMATION TABLE	
INPUT	OUTPUT
D11	D14
D21	D24
D31	D34

2326

FIG.31

FLOW OF EXTRACTING COMMUNICATION
DATA BETWEEN UNITS (S3070)

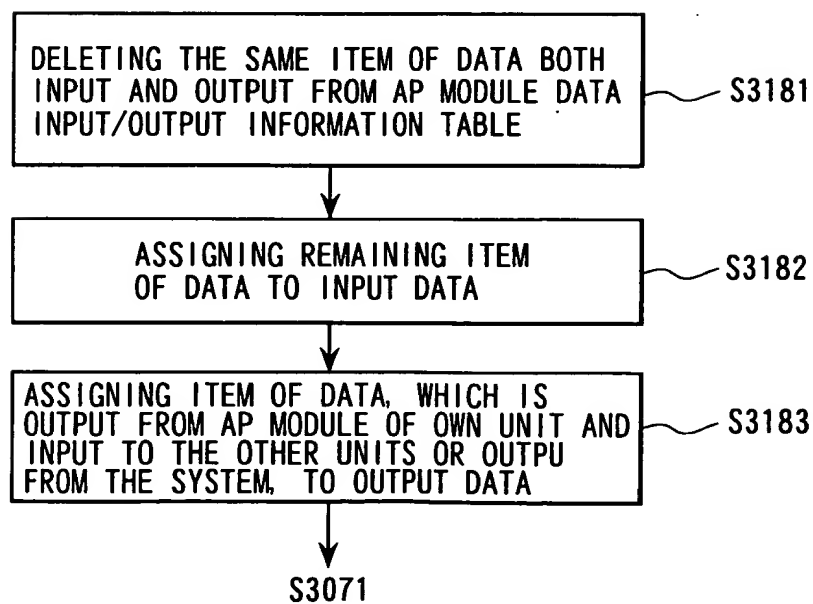


FIG.24

AP MODULE START INFORMATION TABLE			
T1	T2	T3	
2422a	2422b	2422c	2422d
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
M11	1	10ms CYCLE	NULL
M12			
M13			

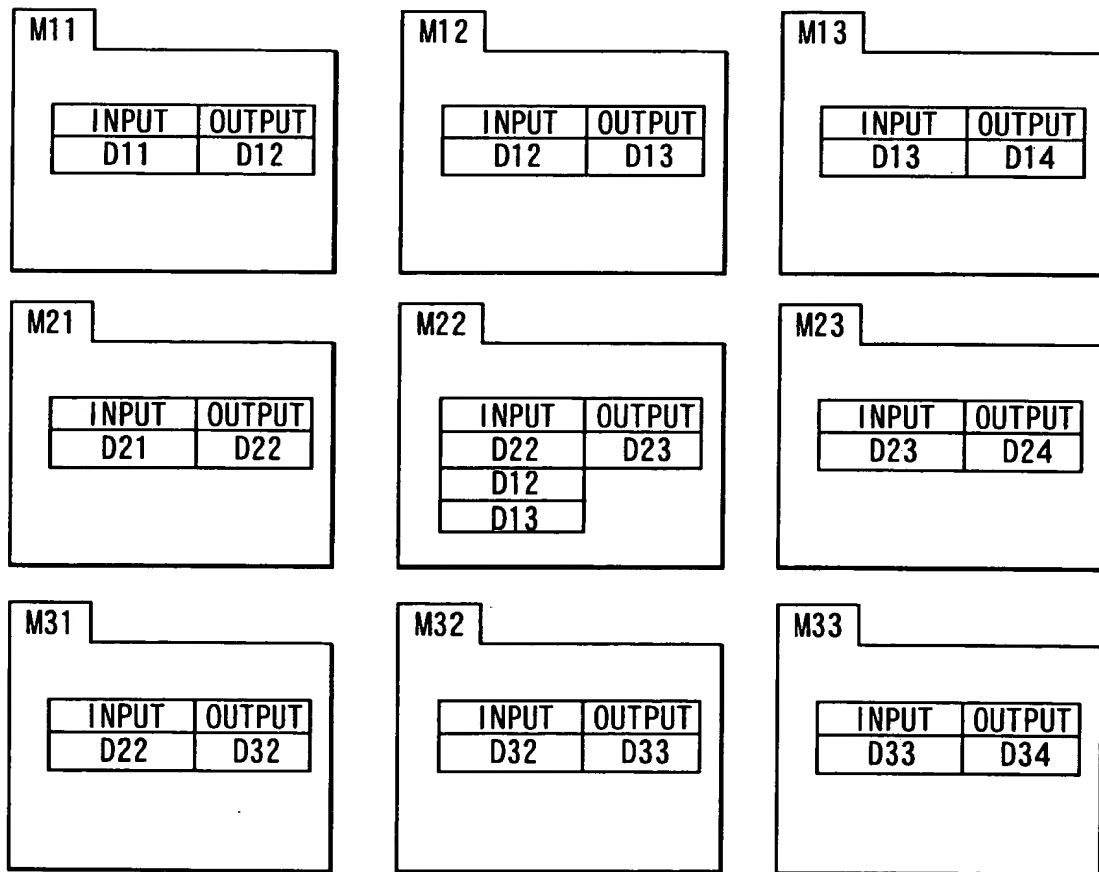
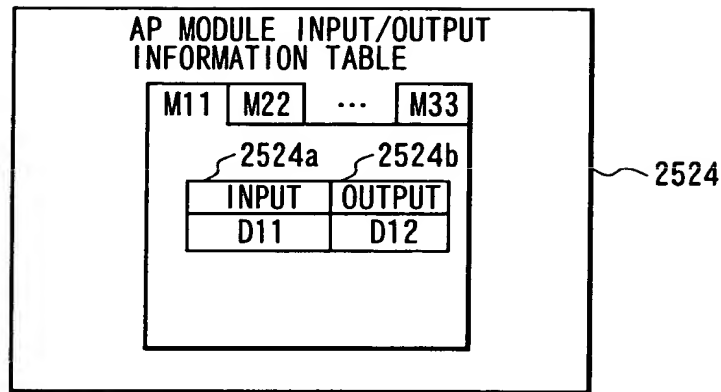


T1			
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
M11	1	10ms CYCLE	NULL
M12			
M13			

T2			
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
M11	2	AFTER UPDATING DATA D21	1:10ms AFTER COMPLETION OF M22
M12			
WEIGHT 1			
M23			

T3			
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
M31	3	AFTER UPDATING DATA D22	NULL
M32			
M33			

FIG.25



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.26(a)

AP MODULE/MESSAGE OBJECT START INFORMATION TABLE FOR UNIT.1

T1			
2630a STARTING ORDER	2630b PRIORITY	2630c START CONDITION	2630d EVENT SETTING CONDITION
Meg11 RECEIVING	1	10ms CYCLE	NULL
M11			
M12			
Meg12-13 SENDING			
M13			

FIG.26(b)

T2			
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg21 RECEIVING	2	AFTER UPDATING DATA Mge21	NULL
M21			
Meg22 SENDING			

FIG.26(c)

T3			
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg22 RECEIVING	3	AFTER UPDATING DATA Mge22	NULL
M31			
Meg32 SENDING			

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.27(a)

AP MODULE/MESSAGE OBJECT START INFORMATION TABLE FOR UNIT2

T2			
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg22 RECEIVING	1	AFTER UP DATING Meg22	1:10ms AFTER COMPLETING M22
Meg12-13 SENDING			
M22			
WEIGHT 1			
M23			
Meg22 RECEIVING			

FIG.27(b)

T3			
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg32 RECEIVING	2	AFTER UP DATING DATA Mge32	NULL
M32			
Meg33 SENDING			

FIG.28

T3			
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg33 RECEIVING	1	AFTER UP DATING DATA Mge33	NULL
M31			
Meg34 SENDING			

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.29(a)

MESSAGE OBJECT INFORMATION TABLE FOR UNIT 1						
2931a	2931b	2931c	2931d	2931e	2931f	2931g
DATA	MESSAGE OBJECT	READ/ WRITE	SEND/ RECEIVE	ACTION AFTER UPDATING	PRIORITY	UPDATING CONDITION
D11	Msg11	READ	RECEIVING	NULL	NULL	AFTER ARRIVAL
D12 D13	Msg12-13	WRITE	SENDING	NULL	2	AFTER M12
D14	Msg14	WRITE	SENDING	NULL	1	AFTER M13
D21	Msg21	READ	RECEIVING	TASK2 START	NULL	AFTER ARRIVAL
D22	Msg22	WRITE/READ	SENDING	TASK3 START	2	AFTER M21
D32	Msg32	WRITE	SENDING	NULL	2	AFTER M31

FIG.29(b)

MESSAGE OBJECT INFORMATION TABLE FOR UNIT 2						
DATA	MESSAGE OBJECT	READ/ WRITE	SEND/ RECEIVE	ACTION AFTER UPDATING	PRIORITY	UPDATING CONDITION
D22	Msg22	READ	RECEIVING	TASK2 START	NULL	AFTER ARRIVAL
D12 D13	Msg12-13	READ	RECEIVING	NULL	NULL	AFTER ARRIVAL
D24	Msg24	WRITE	SENDING	NULL	2	AFTER M23
D32	Msg32	READ	RECEIVING	TASK3 START	NULL	AFTER ARRIVAL
D33	Msg33	WRITE	SENDING	NULL	3	AFTER M32

FIG.29(c)

MESSAGE OBJECT INFORMATION TABLE FOR UNIT 3						
DATA	MESSAGE OBJECT	READ/ WRITE	SEND/ RECEIVE	ACTION AFTER UPDATING	PRIORITY	UPDATING CONDITION
D33	Msg22	READ	RECEIVING	TASK3 START	NULL	AFTER ARRIVAL
D34	Msg24	WRITE	SENDING	NULL	2	AFTER M23

FIG.30

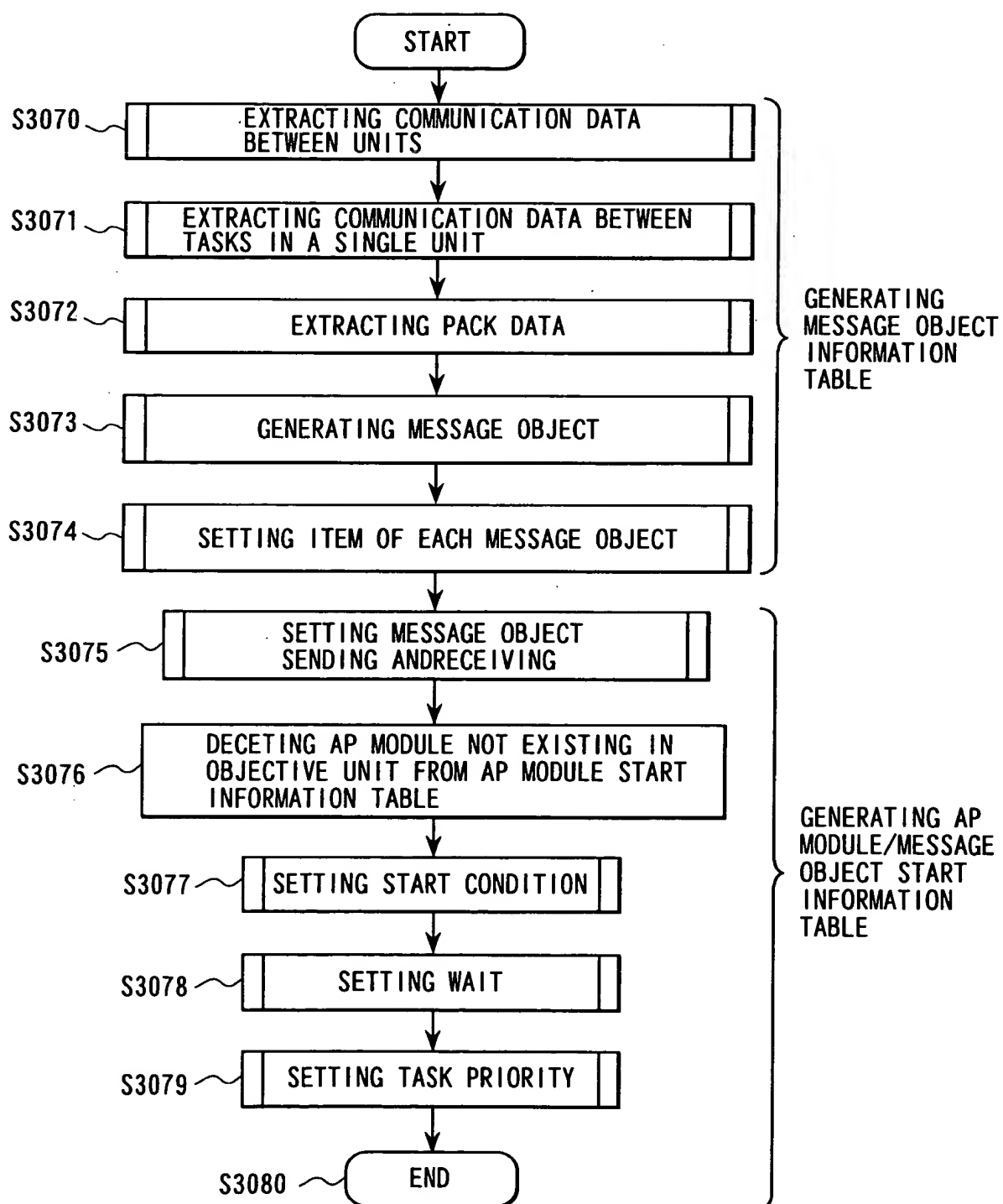
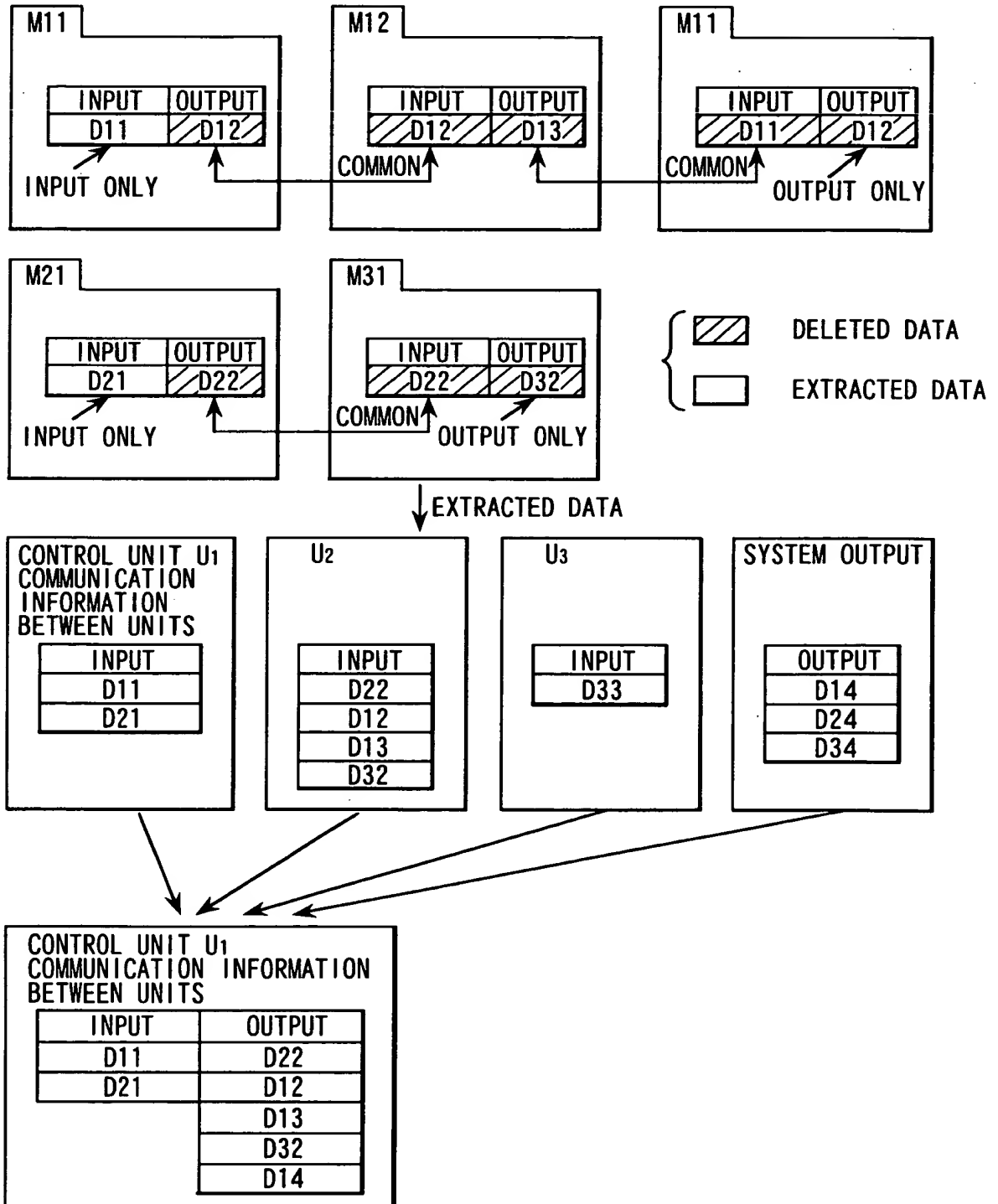


FIG.32

PROCESSING OF EXTRACTING COMMUNICATION DATA
BETWEEN UNITS IN CONTROL UNIT U₁

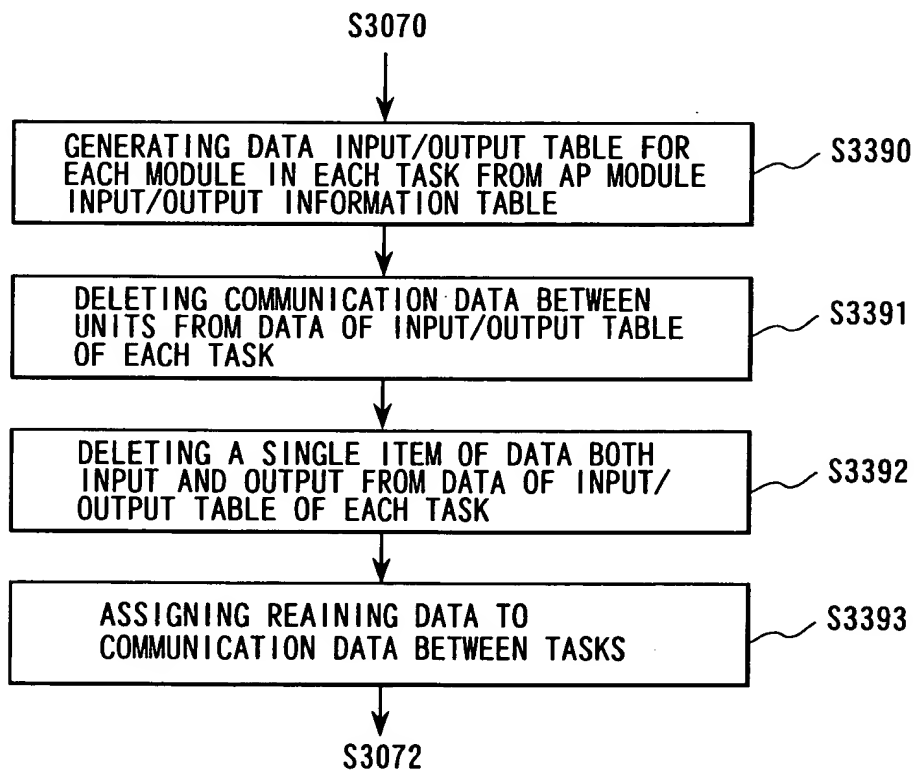


APPROVED	O.G. FIG.	
- BY	CLASS	SUBCLASS
DRAWN BY		

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FIG.33

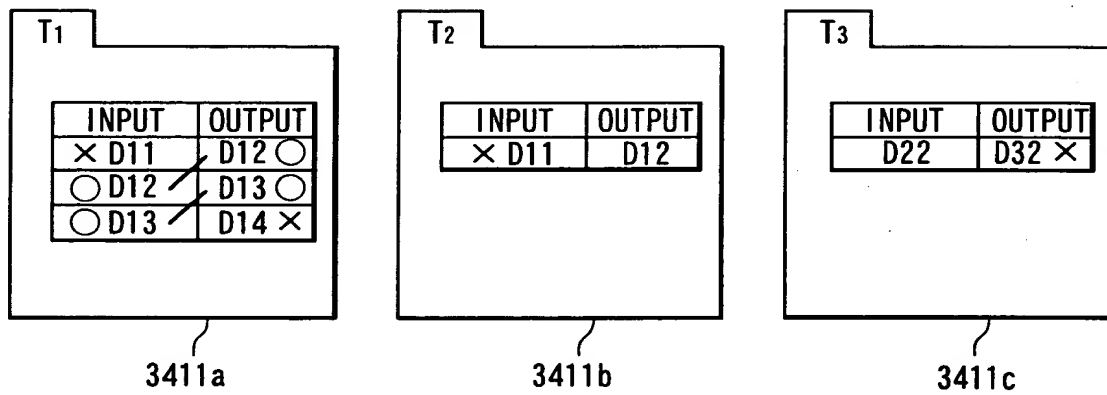
FLOW OF EXTRACTING COMMUNICATION DATA BETWEEN TASKS (S3071)



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG.34

EXTRACTING COMMUNICATION DATA BETWEEN TASKS



{ × : DELETED DATA IN S3391
 { ○ : DELETED DATA IN S3392

↓ EXTRACTION

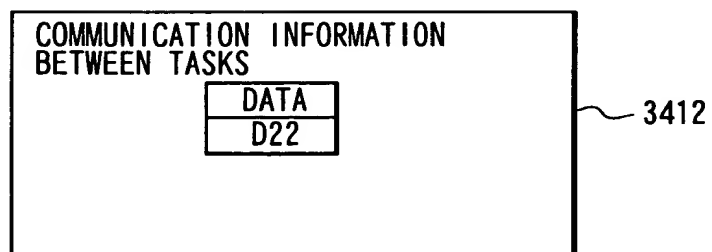


FIG.35

FLOW OF EXTRACTING DATA TO BE PACKED (S3072)

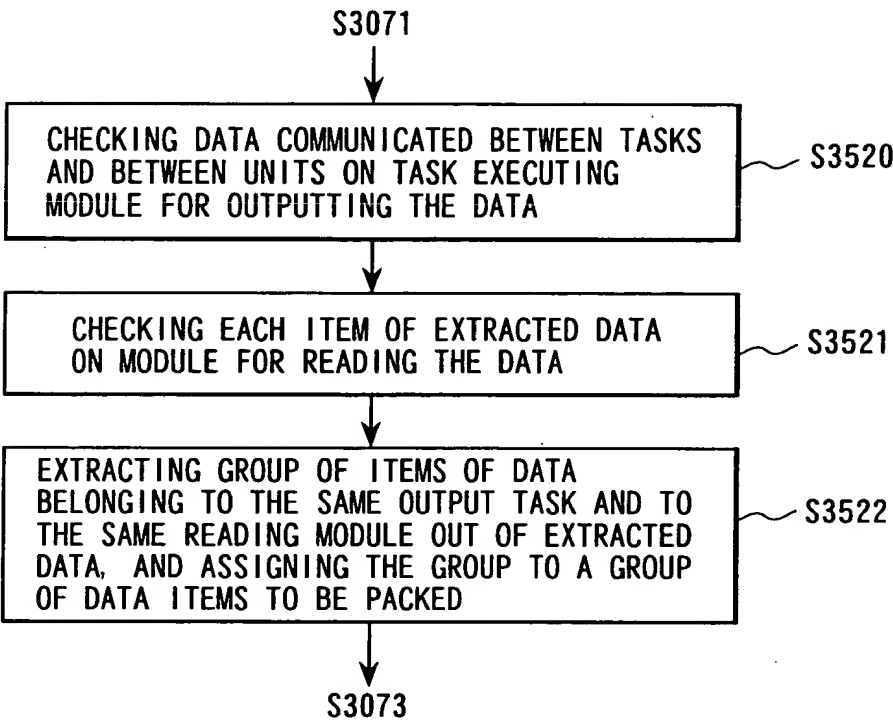


FIG.36

PACK EXTRACTING TABLE

DATA	OUTPUT TASK	READING M
D22	T ₂	M31, M22
D11	—	M11
D21	—	M21
D14	T ₁	—
D32	T ₃	—
D12	T ₁	M22
D13	T ₁	M22

PACK ()

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FIG.37

FLOW OF GENERATING MESSAGE OBJECT (S3073)

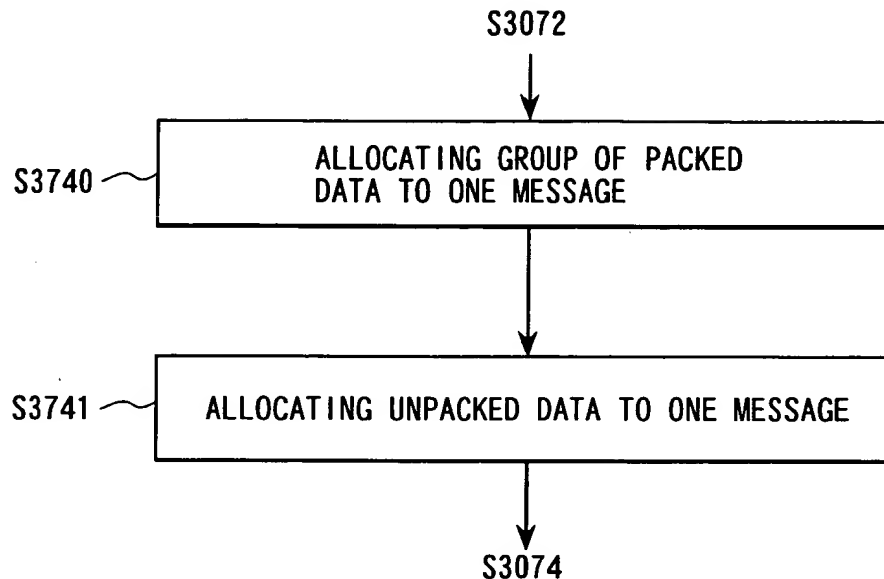


FIG.38

PROCESSING OF SETTING MESSAGE OBJECT ITEM (S3074)

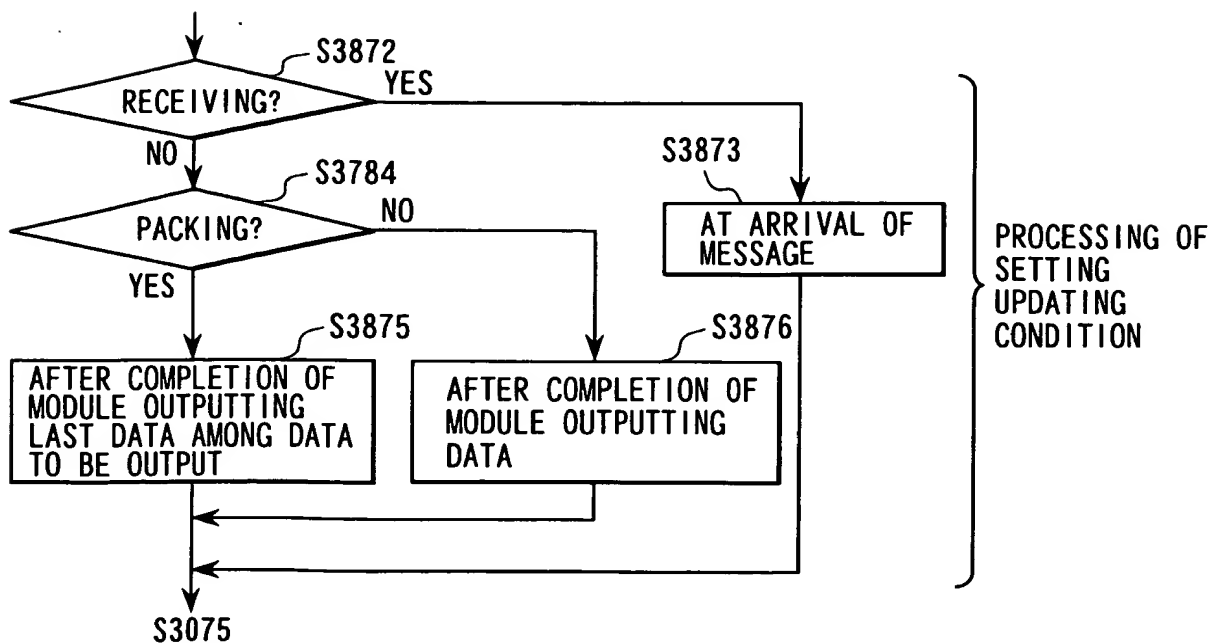


FIG.38

PROCESSING OF SETTING MESSAGE OBJECT ITEM (S3074)

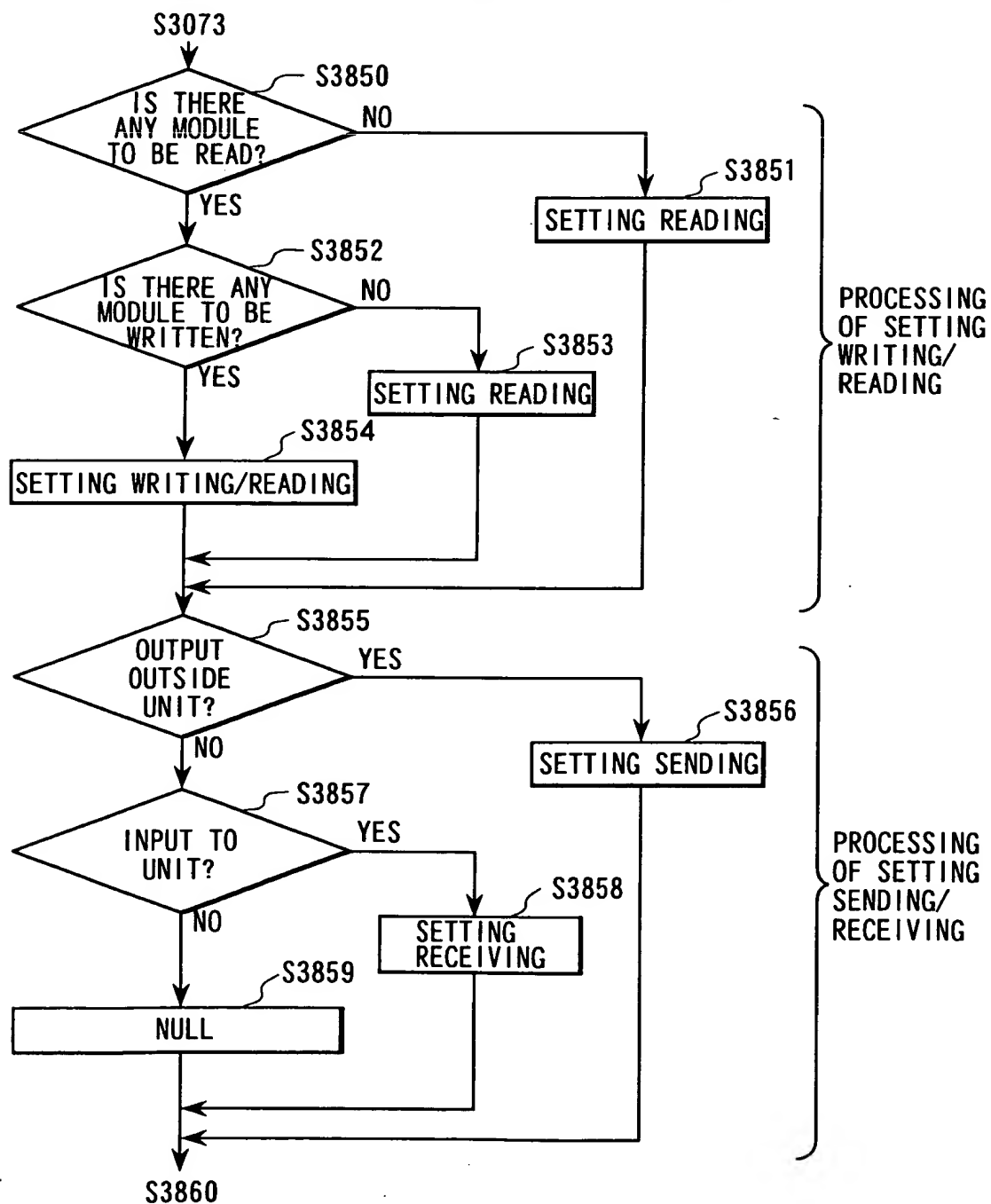


FIG.39

PROCESSING OF SETTING MESSAGE OBJECT ITEM (S3740)

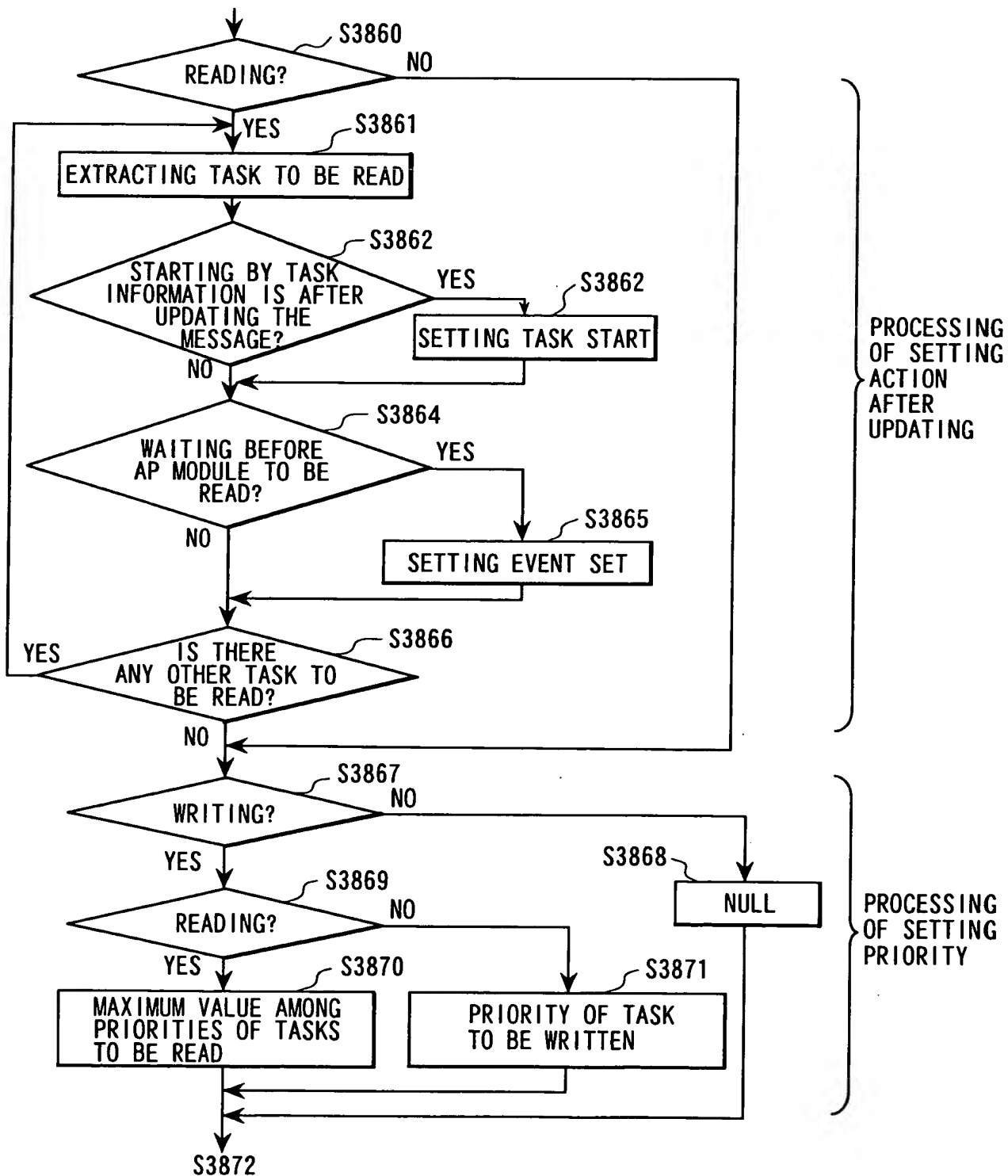


FIG.41

FLOW OF SETTING MESSAGE OBJECT SENDING/RECEIVING (S3075)

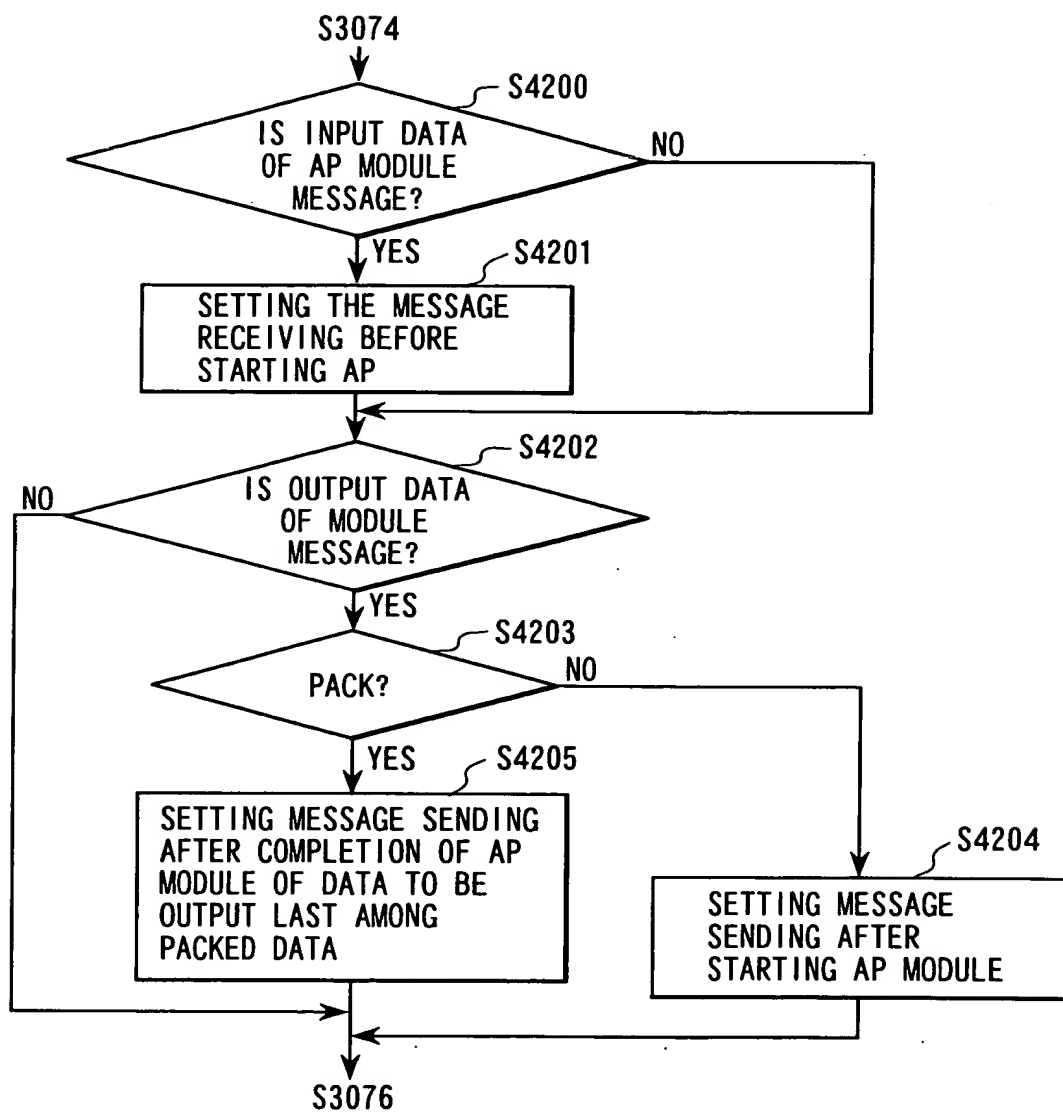


FIG.42

FLOW OF SETTING START CONDITION (S3077)

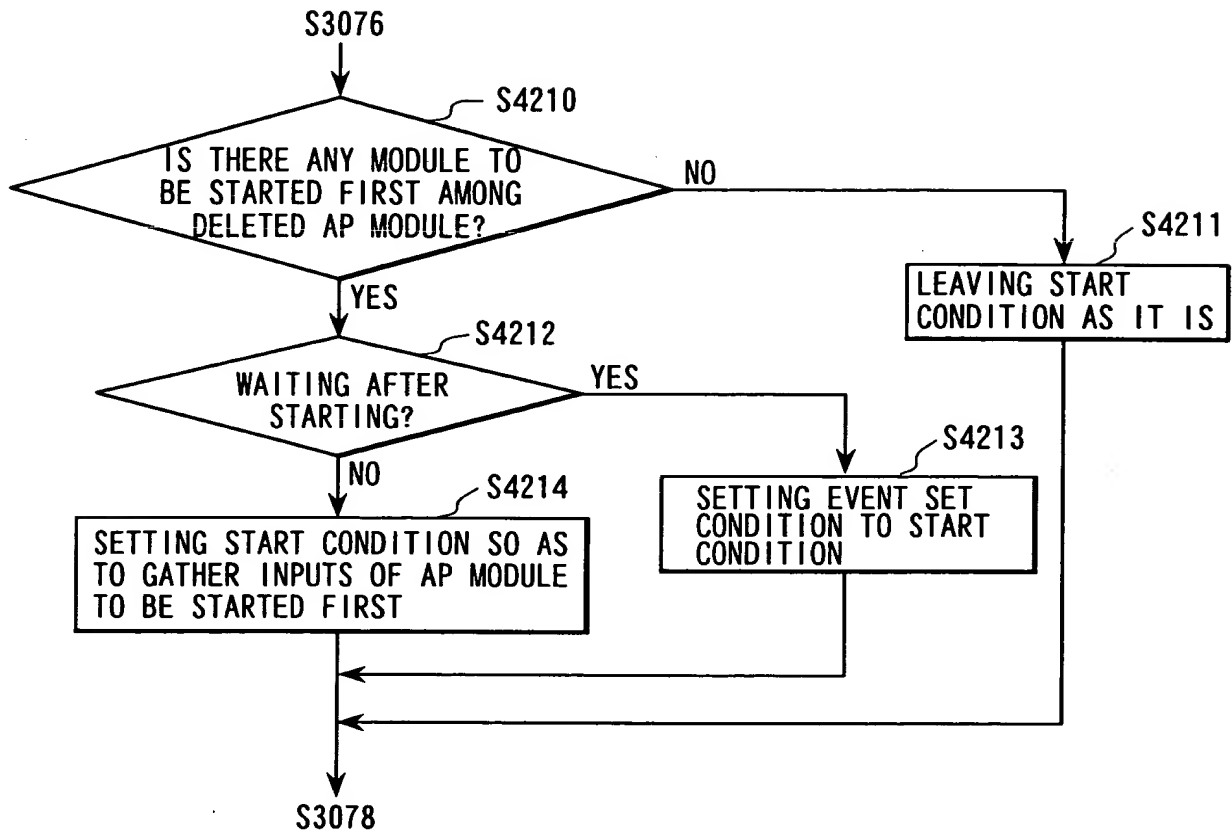


FIG.44

FLOW OF SETTING TASK PRIORITY (S3079)

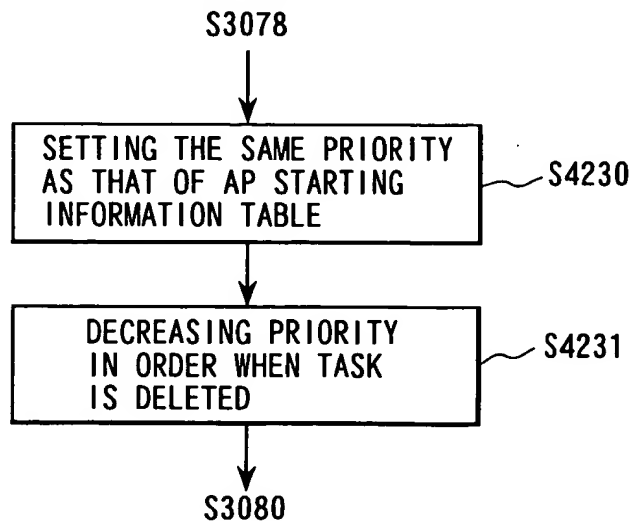


FIG.43

FLOW OF SETTING WAIT (S3078)

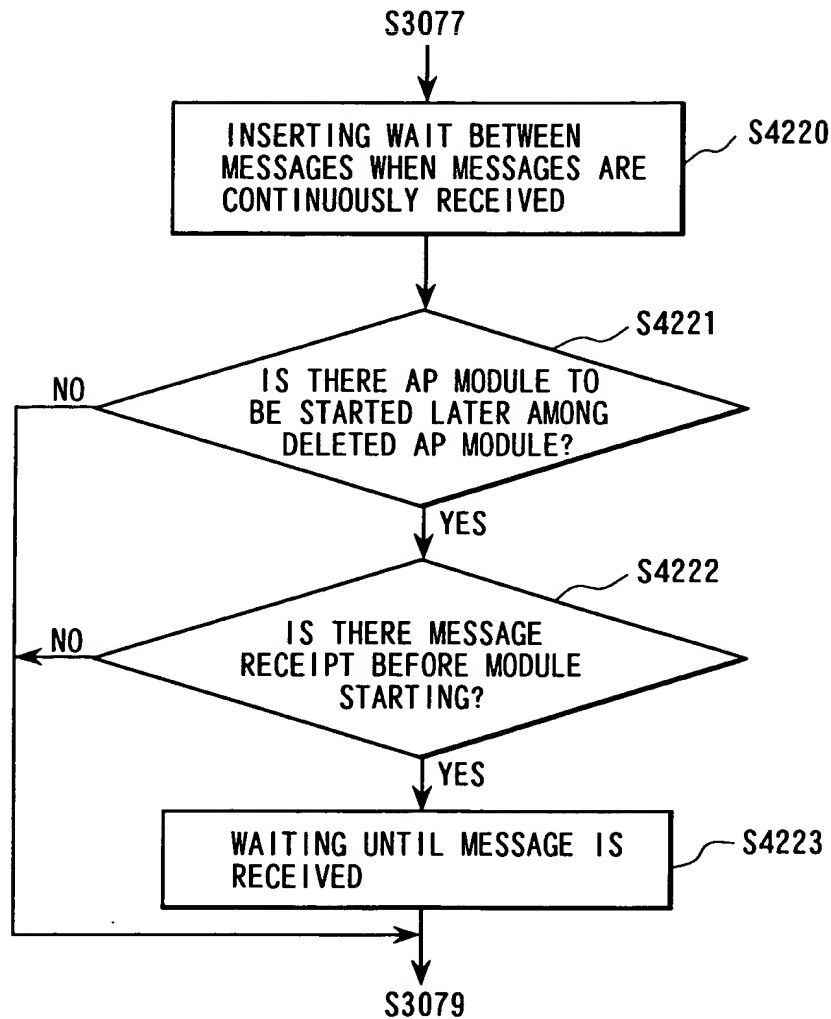


FIG.45(a)

COMMUNICATION INFORMATION TABLE						
4580a	4580b	4580c	4580d	4580e	4580f	4580g
DATA	PRIORITY	DIRECT/ CYCLE (hour)	ACTION AT RECEIVING	TIME- OUT	NOMSG ALLOWABLE NUMBER OF TIMES	START TASK ID AT OCCURRENCE OF ERROR
D12	3	CYCLE (10)	+TASK3 EVENT SET	10	10	TASK10
D23	—	—	+TASK2 EVENT SET	10	10	TASK10
						Ack PRESENCE/ ABSENCE
						PRESENCE

FIG.45(b)

PACK INFORMATION TABLE						
4581a	4581b	4581c	4581d	4581e	4581f	4581g
DATA	PRIORITY	DIRECT/ CYCLE (hour)	ACTION AT RECEIVING	TIME- OUT	NOMSG ALLOWABLE NUMBER OF TIMES	START TASK ID AT OCCURRENCE OF ERROR
D12, D3, D22	—	—	—	—	—	—
						Ack PRESENCE/ ABSENCE
						—
						SENDING TIMING
						AFTER UPDATING D12
						COMMUNICATION ALONE
						D22

ALL AFTER UPDATING
ANY TIME AFTER UPDATING

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.46(a)

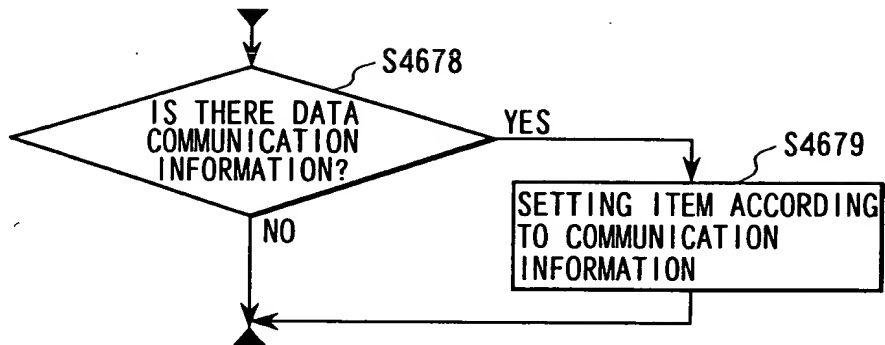


FIG.46(b)

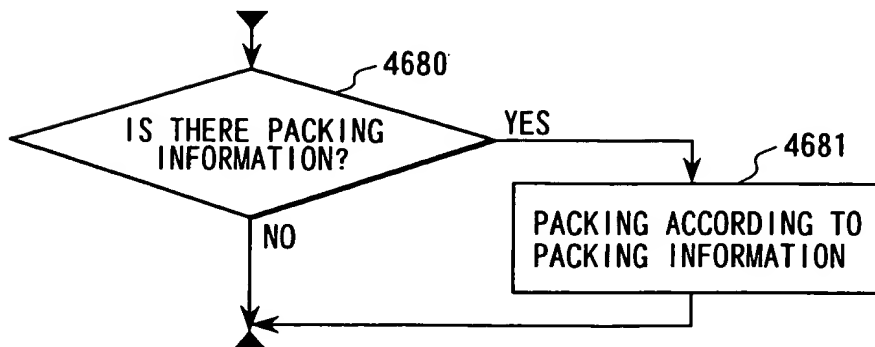
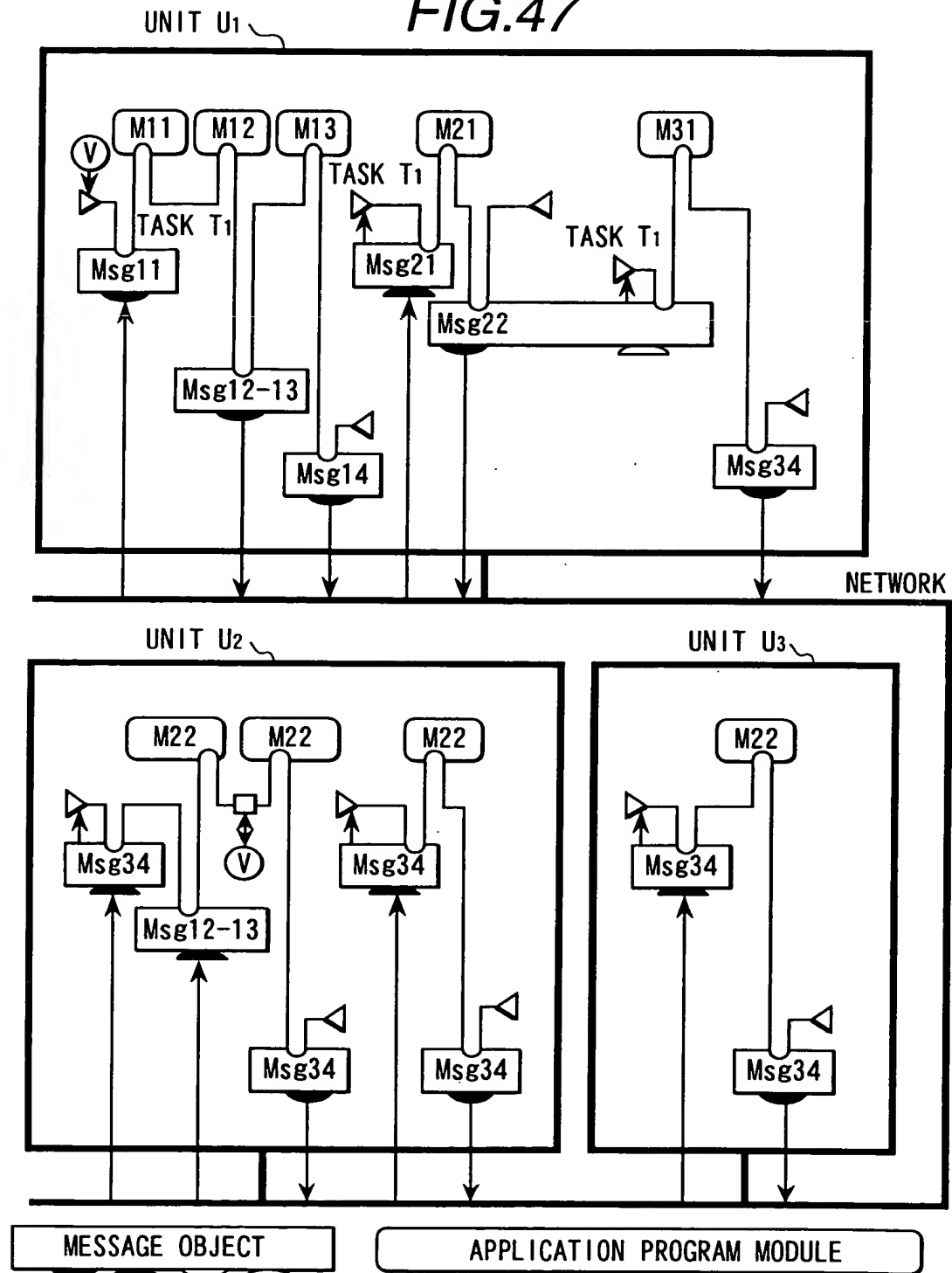


FIG.47



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.48

MESSAGE OBJECT INFORMATION TABLE

DATA	MESSAGE	WRITE/ READ	SEND/ RECEIVE	ACTION AFTER UPDATING	PRIORITY	UPDATING CONDITION
D12 D13	Msg12-13	WRITE/ READ	NULL	NULL	2	AFTER M12
D22	Msg22	WRITE/READ	NULL	TASK3 START	3	AFTER M21
D11	Msg11	READ	RECEIVE	NULL	NULL	AFTER ARRIVAL
D21	Msg21	READ	RECEIVE	TASK2 START	NULL	AFTER ARRIVAL
D14	Msg14	WRITE	SEND	NULL	1	AFTER M13
D24	Msg24	WRITE	SEND	NULL	2	AFTER M23
D34	Msg34	WRITE	SEND	NULL	3	AFTER M33

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.49

EXAMPLE OF AP MODULE/MESSAGE OBJECT START INFORMATION TABLE

TASK 1

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg11 RECEIVING	1	10ms CYCLE	NULL
M11			
M12			
Meg12-13 SENDING			
M13			
Meg12-13 SENDING			

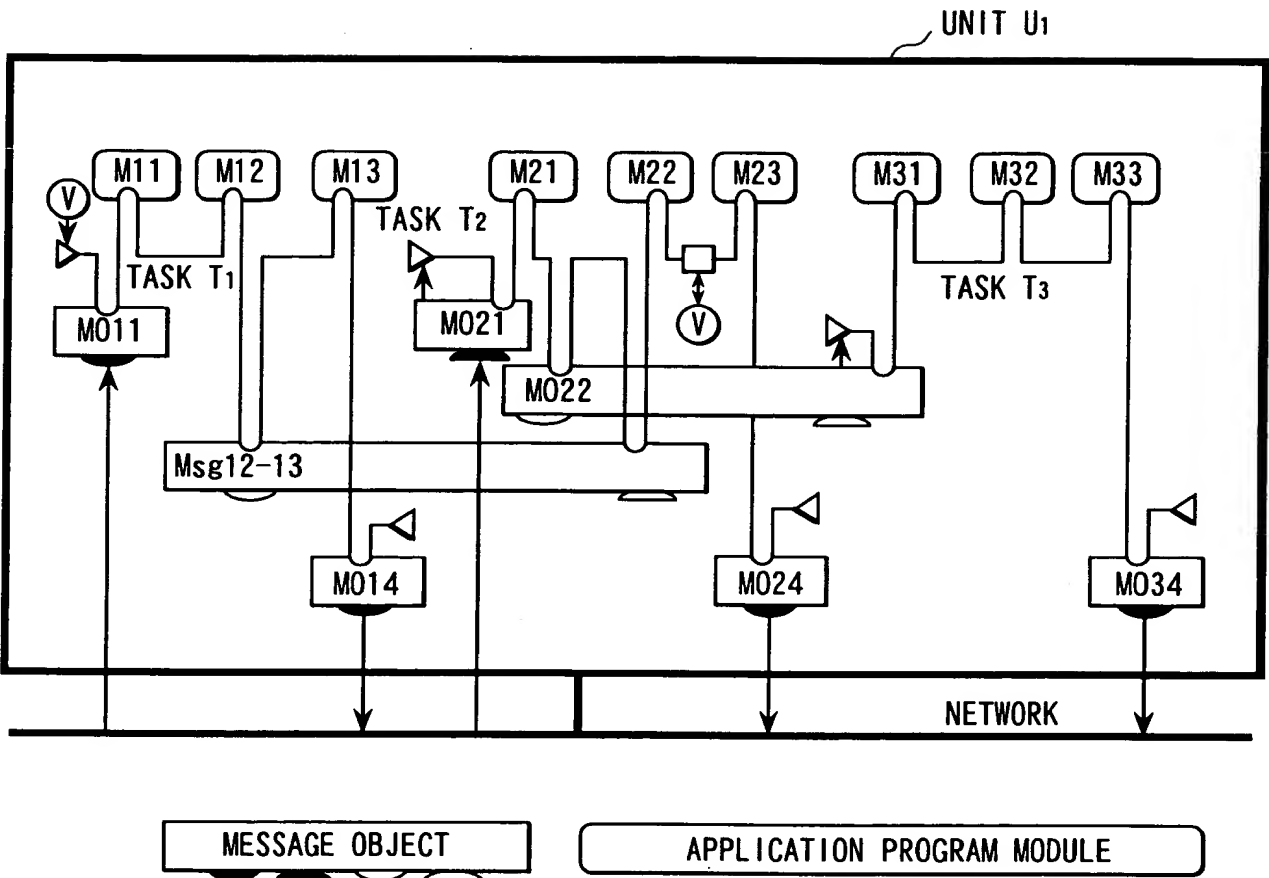
TASK 2

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg21 RECEIVING	2	AFTER UPDATING Meg21	1:10ms AFTER COMPLETION OF M22
M21			
Meg22 SENDING			
Meg12-13 SENDING			
M22			
WEIGHTING 1			
M23			
Meg23 SENDING			

TASK 3

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg22 RECEIVING	3	AFTER UPDATING Meg22	NULL
M31			
M32			
M33			
Meg34 RECEIVING			

FIG.50



- ◐ UPDATING MESSAGE BY RECIVING FROM OUTSIDE OF UNIT
- ◑ SENDING TO OUTSIDE OF UNIT
- ◒ UPDATING MESSAGE BY TASK INSIDE UNIT
- ◓ THERE IS READING BY TASK INSIDE UNIT
- ▷ TASK START
- ◁ TASK END
- ◻ WAIT

FIG. 51

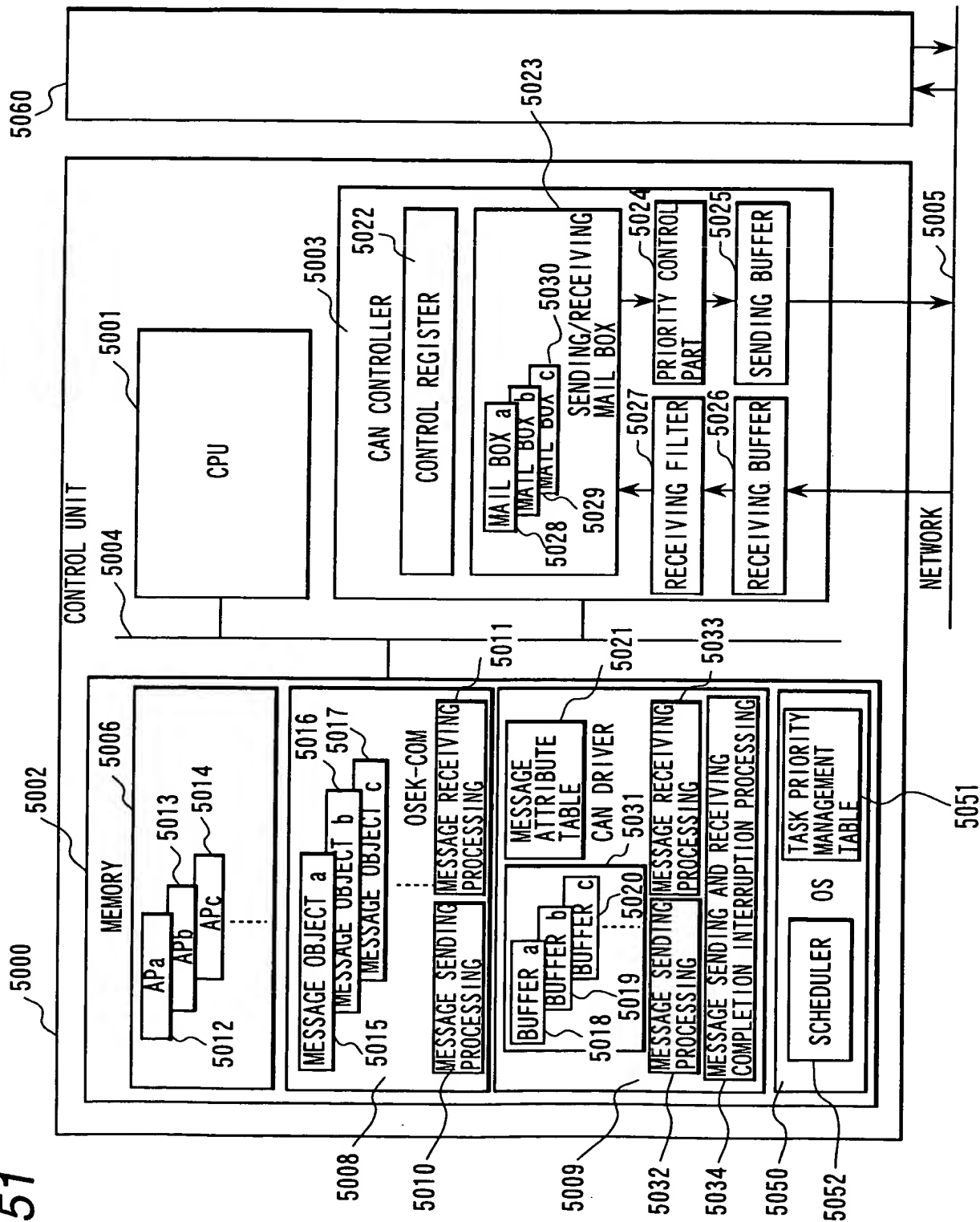


FIG.52

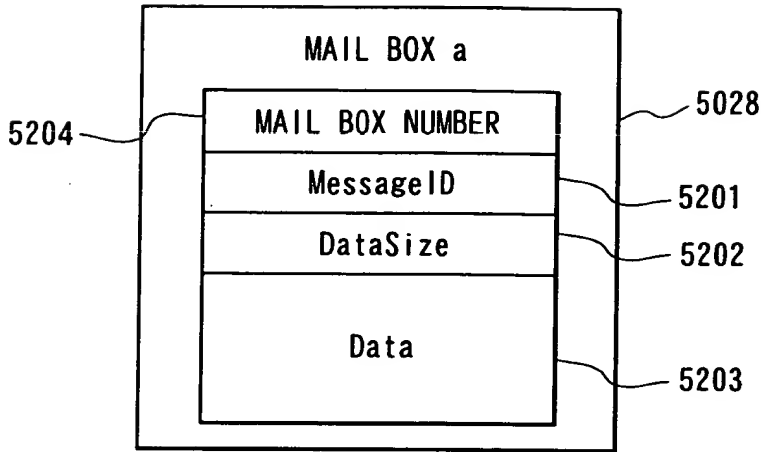


FIG.53

CONTROL REGISTER				
MAIL BOX NUMBER	TXPR	TXACK	RXPR	MBIMR
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
.
.

FIG.54

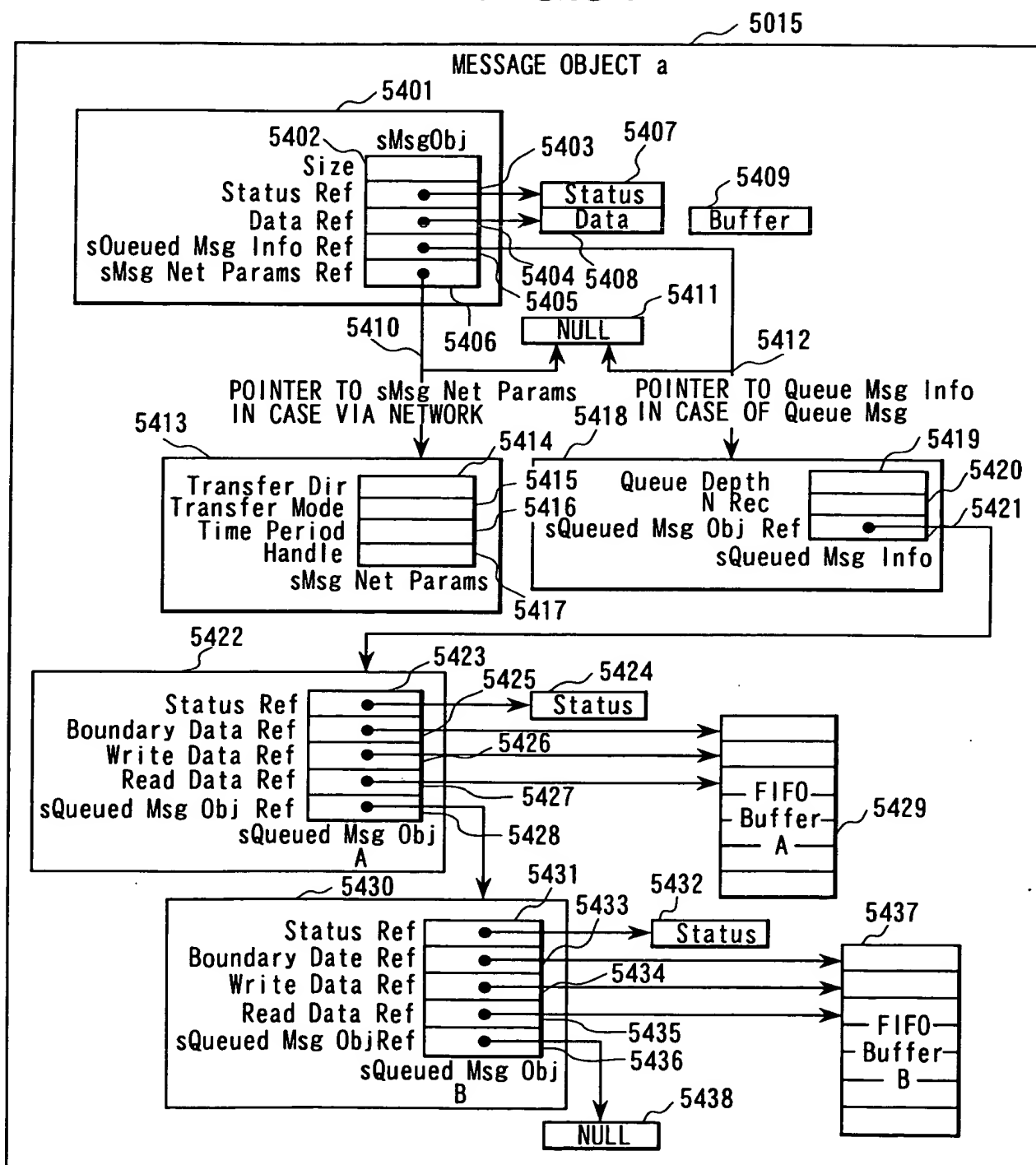


FIG.55

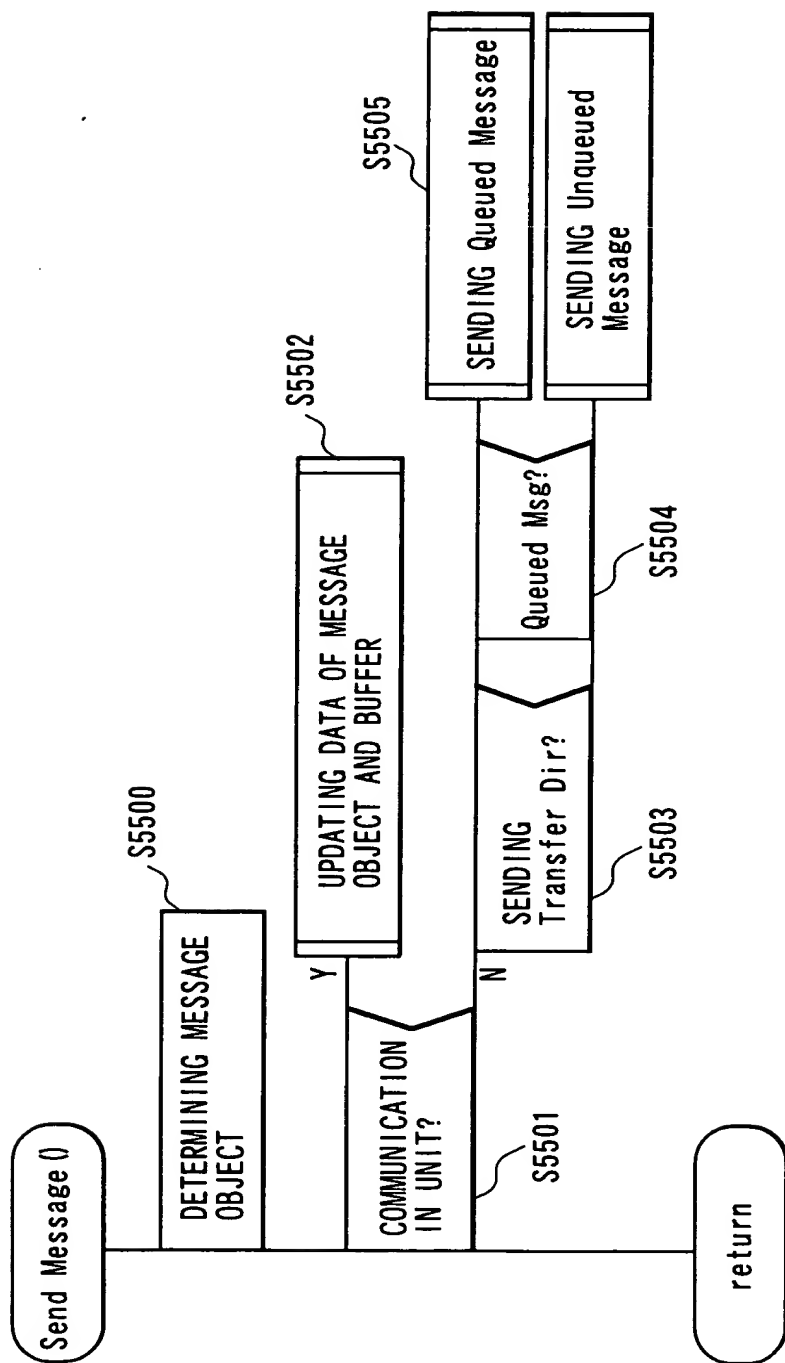


FIG.56

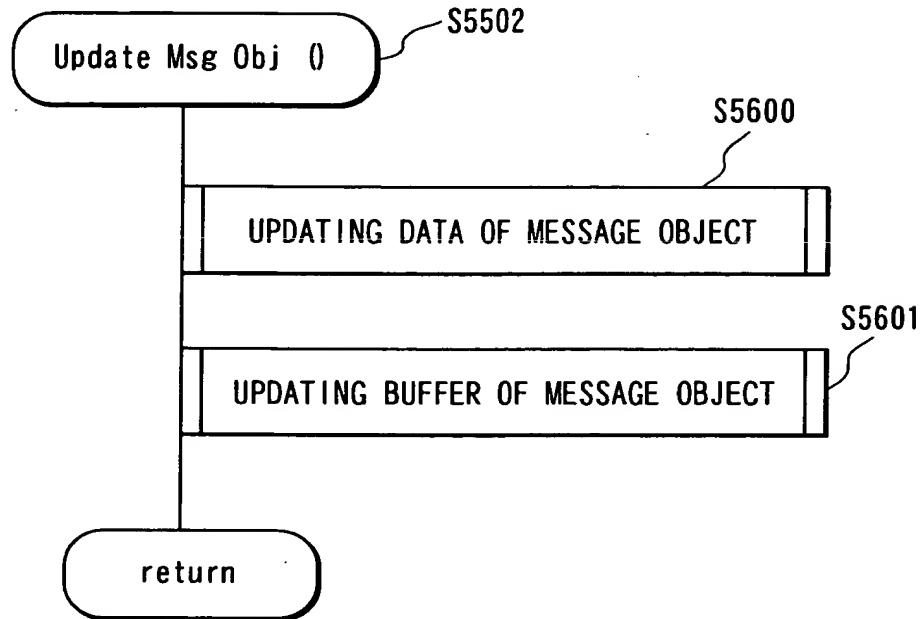


FIG.57

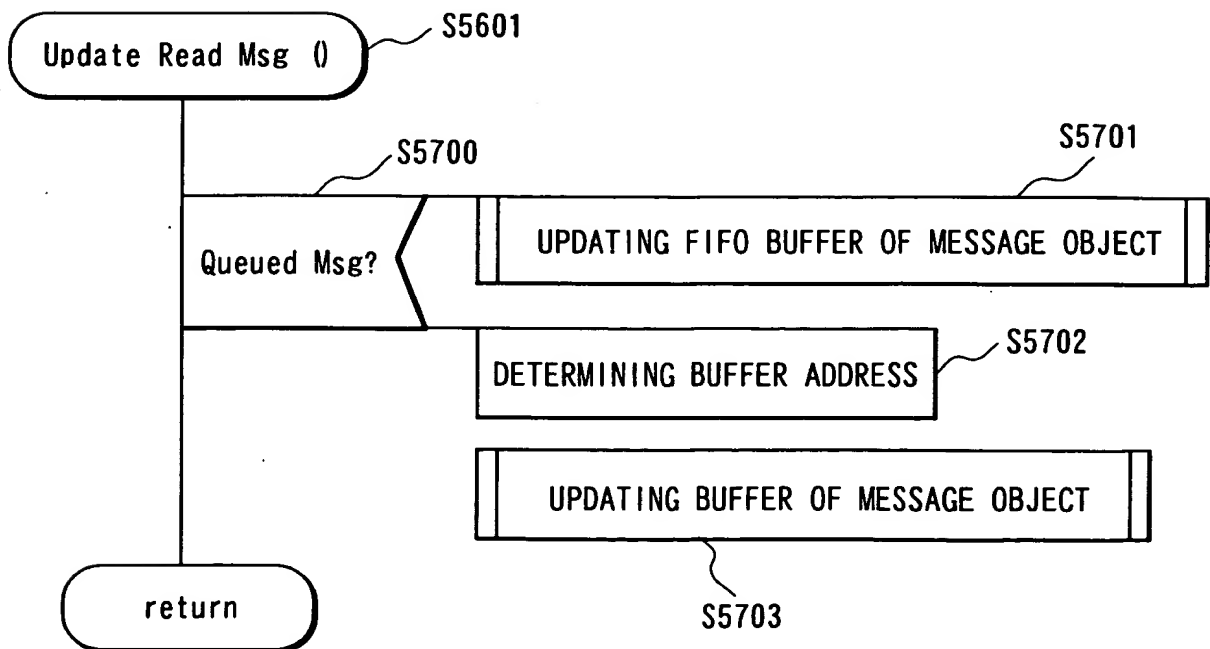


FIG.58

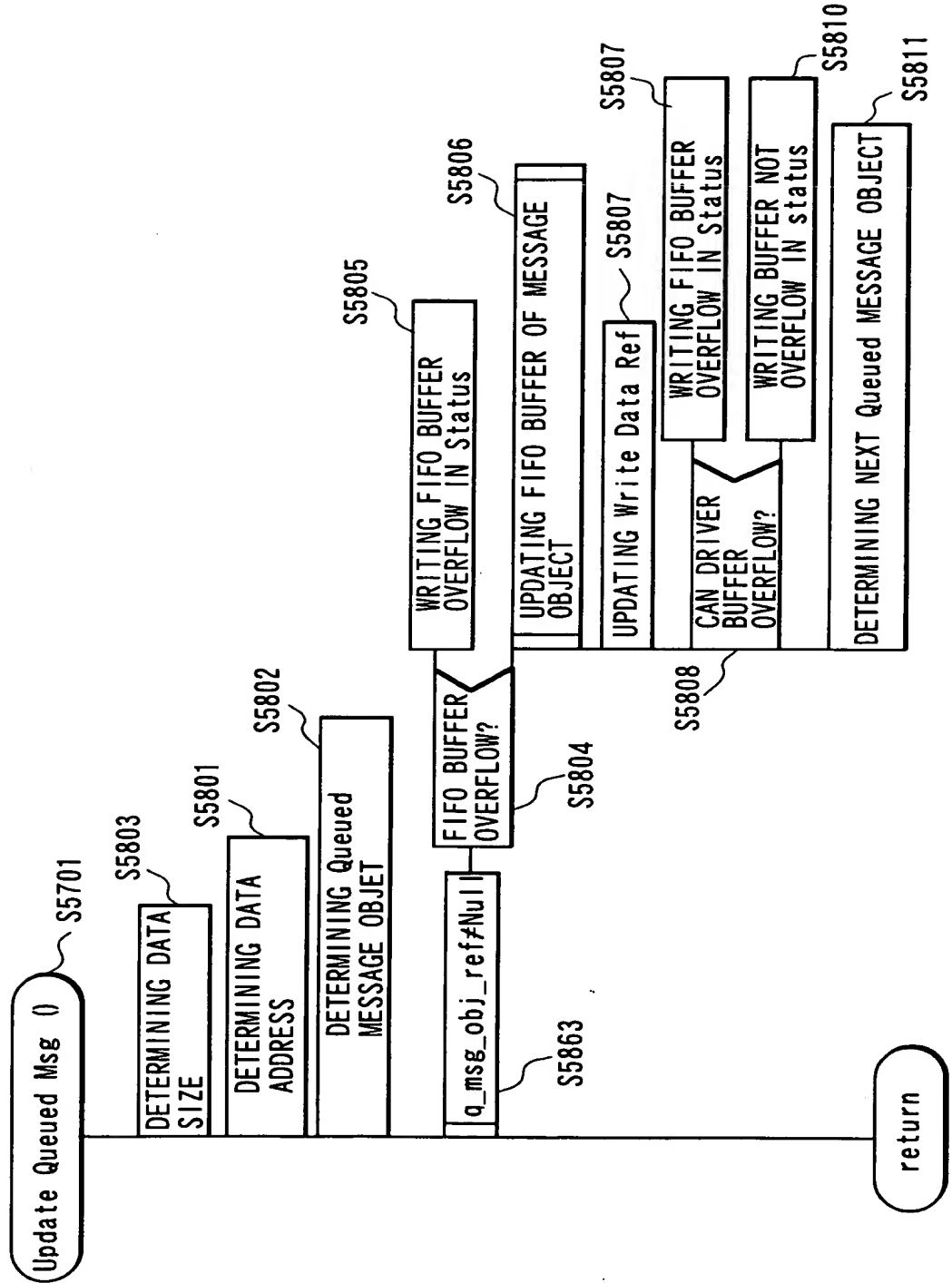
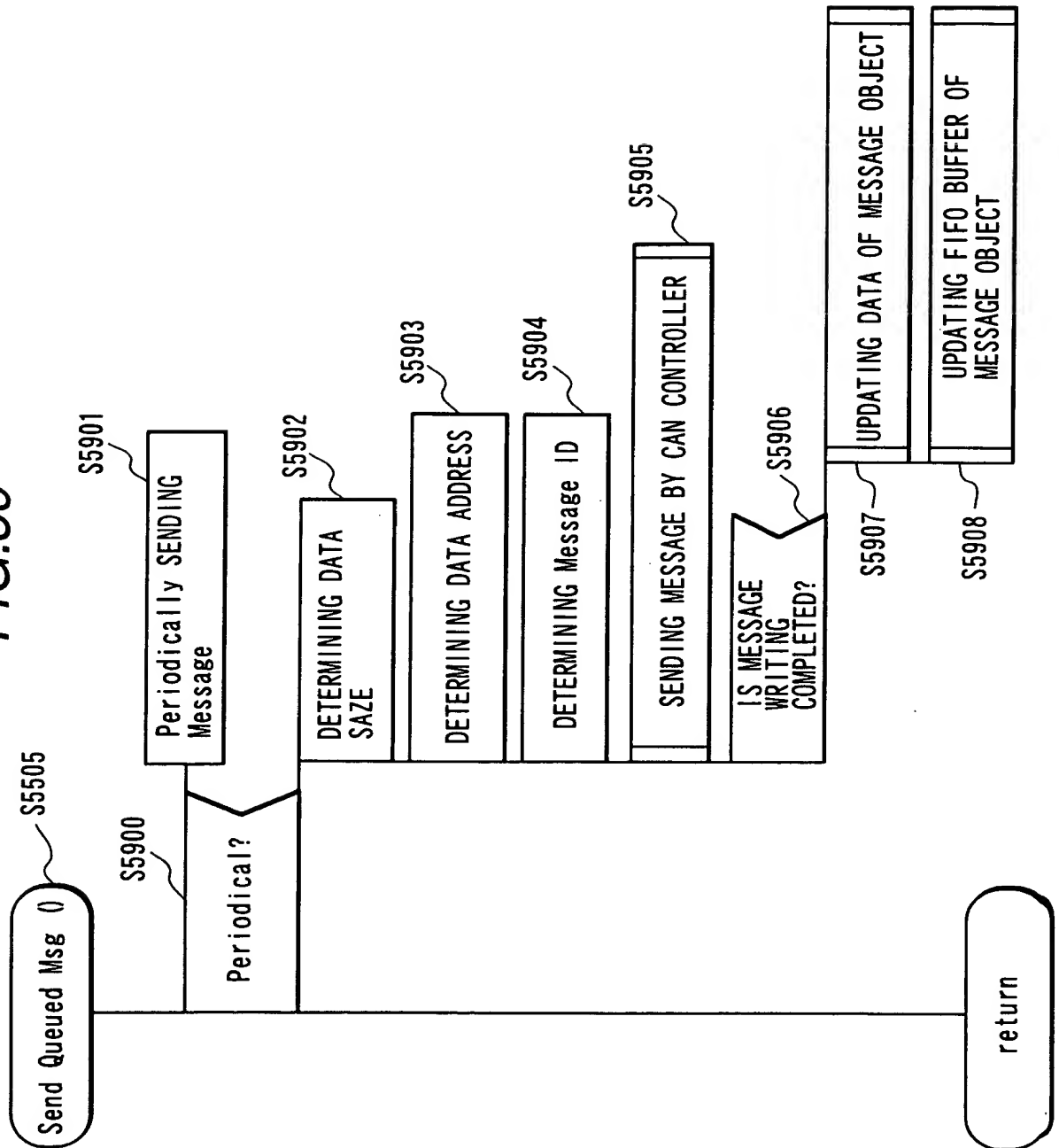


FIG.59



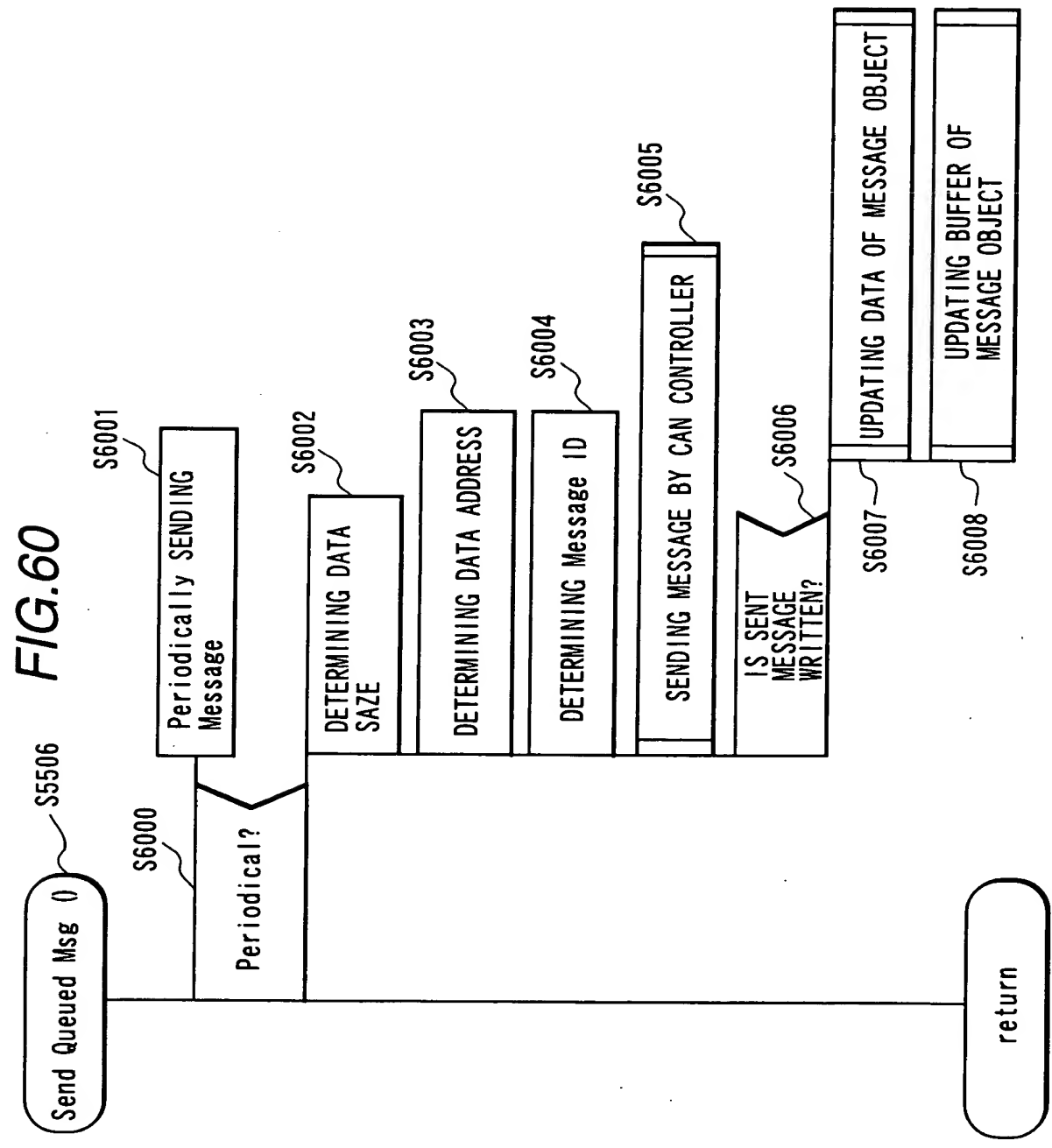


FIG.61

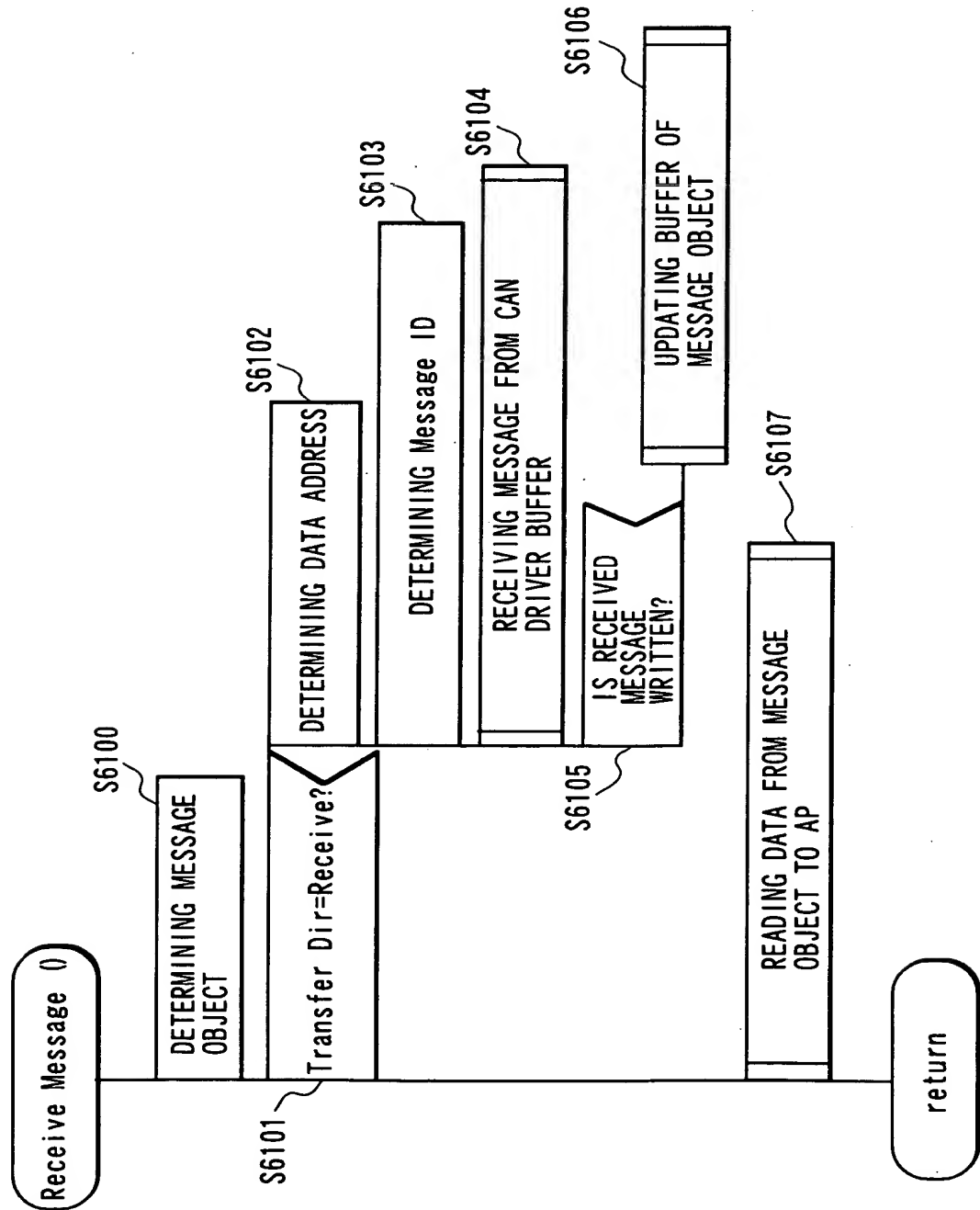


FIG.62

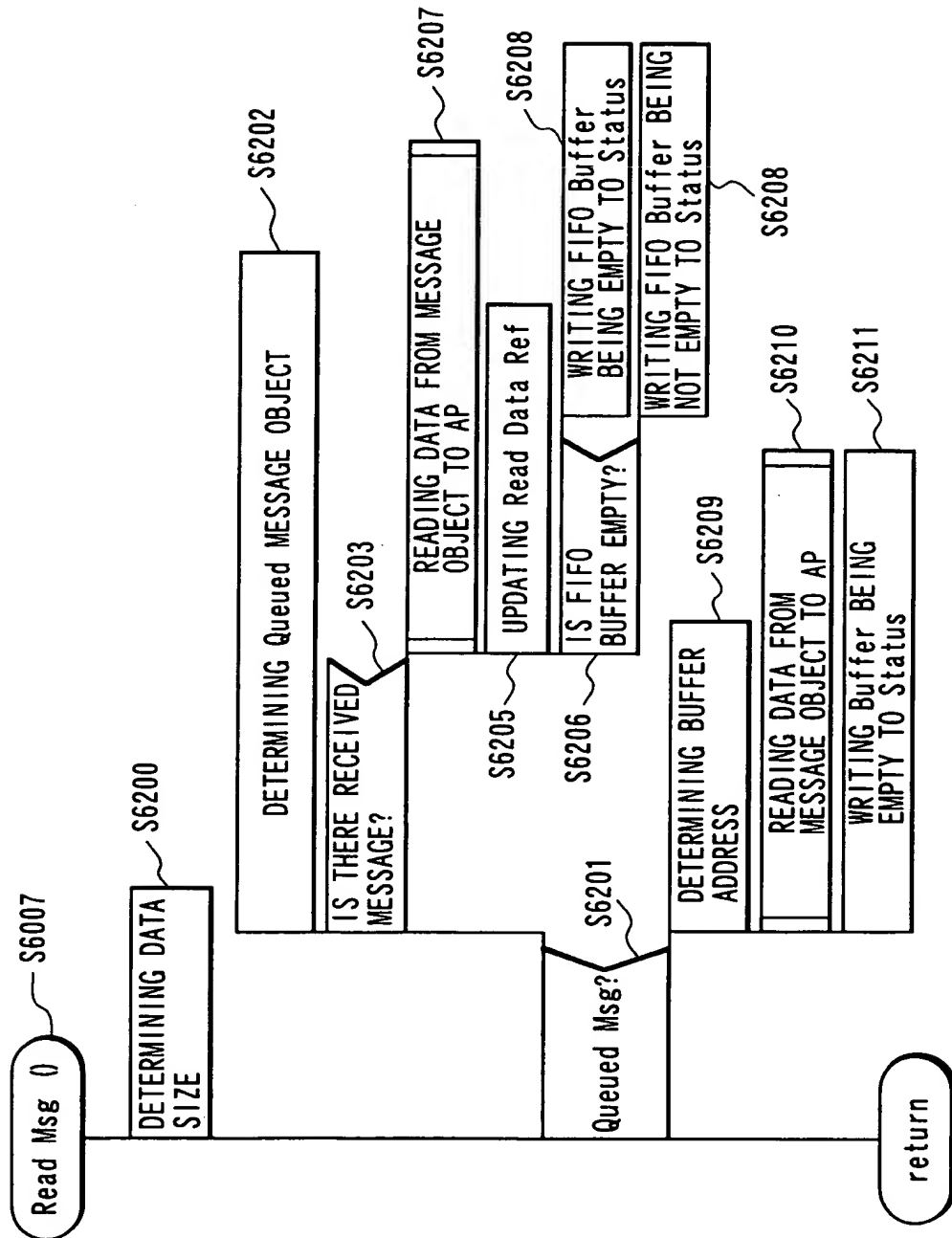


FIG.63

MESSAGE ATTRIBUTE TABLE						
MAIL BOX NUMBER	Message ID	Data Size	QUEUED	LOCKED	NOMSG	LIMIT
0	100	8	0	1	1	0
1	200	8	1	0	1	0
2	500	8	0	0	1	0
.
.

FIG.67

TASK PRIORITY MANAGEMENT TABLE	
MESSAGE ID	TASK PRIORITY
100	1
200	2
300	3

FIG.64

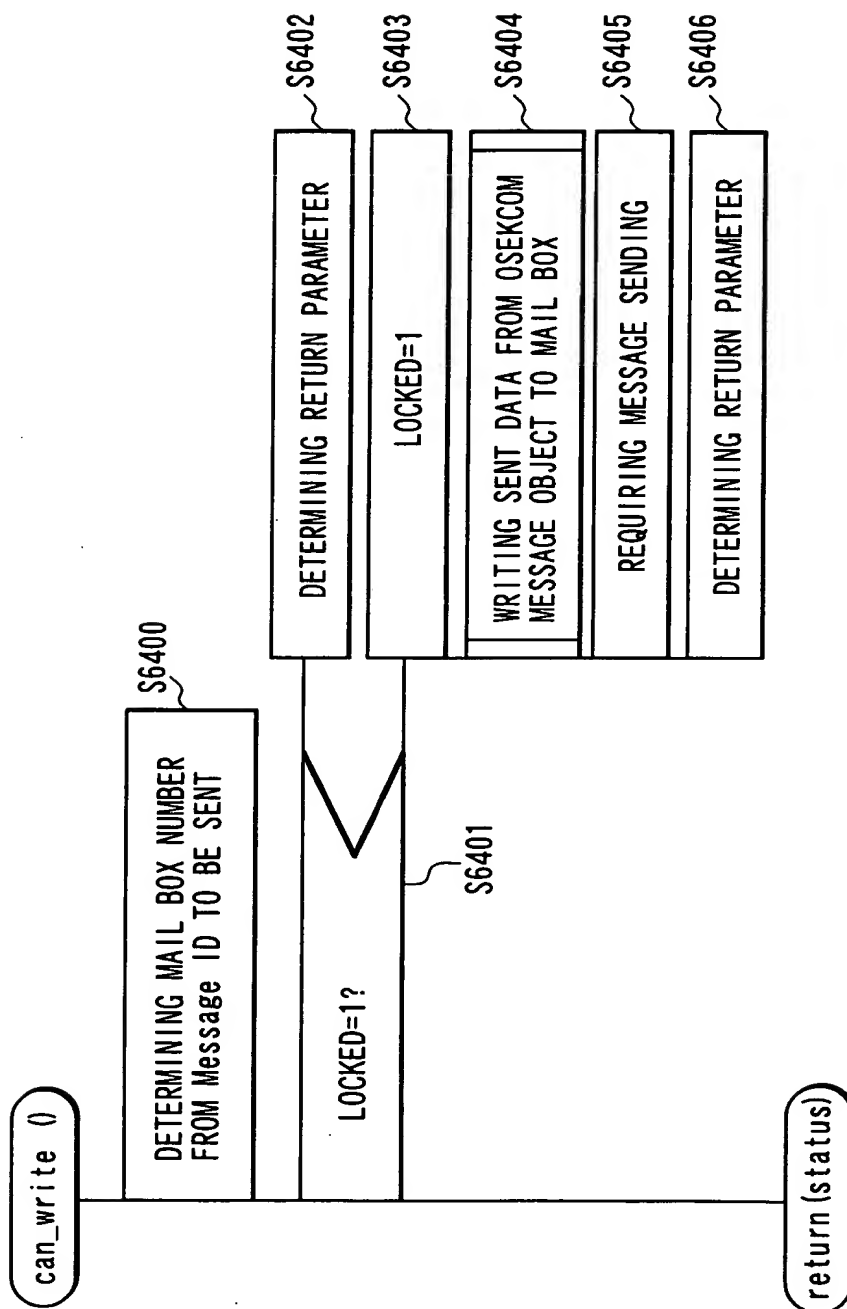


FIG.65

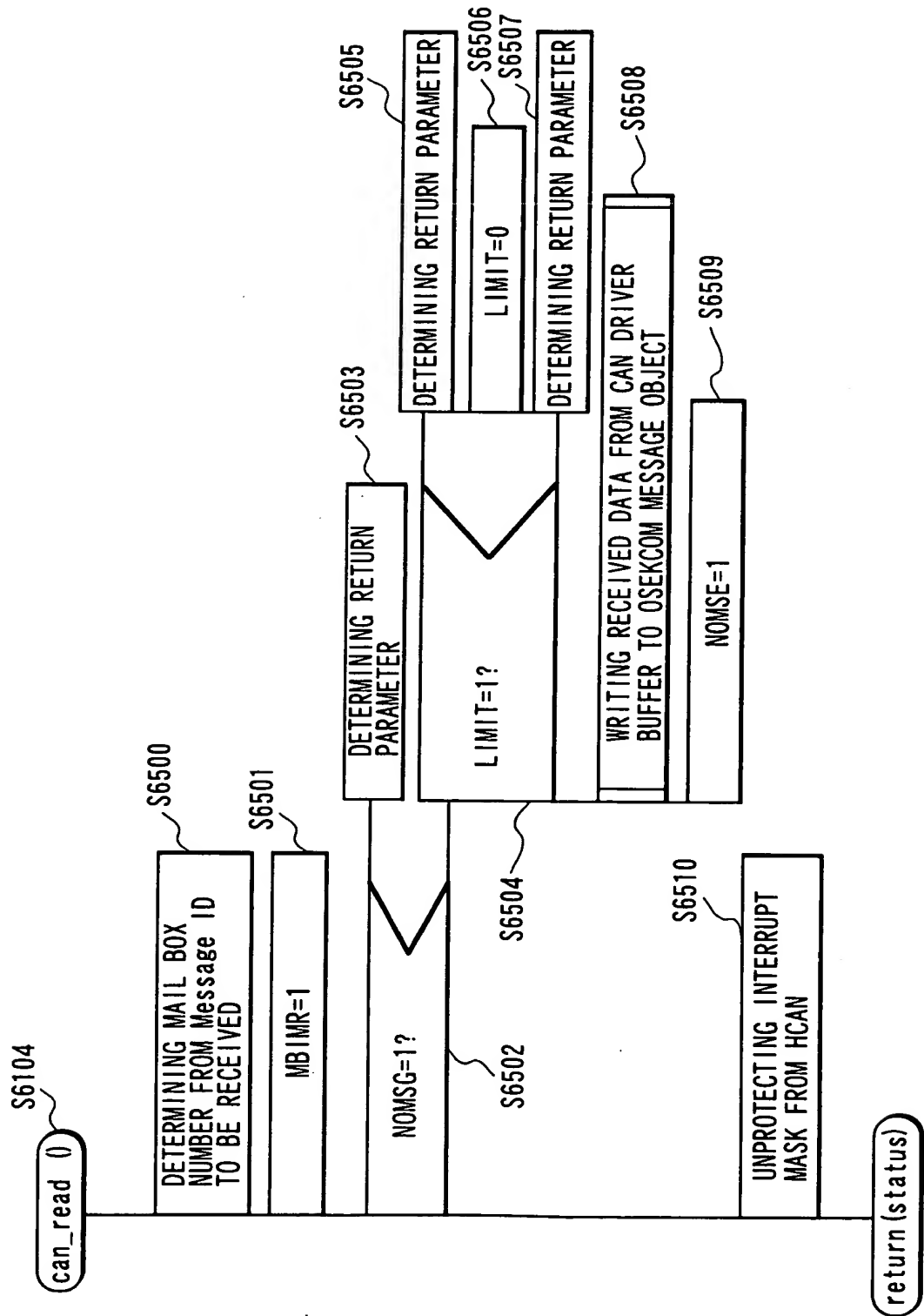


FIG.66

